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INTRODUCTION.

This REVIEW is based on reports for January, 1891, from 2,208 regular and voluntary observers. These reports are classified as follows: 170 reports from Signal Service stations; 118 reports from United States Army post surgeons; 1,441 monthly reports from state weather service and voluntary observers; 31 reports from Canadian stations; 186 reports through the Central Pacific Railway Company; 262 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Meteorological Report of Missouri State Board of Agriculture, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR JANUARY, 1891.

Over the northwest part of the country from the Red River of the North Valley to the north Pacific coast the month was the warmest January on record. The greatest departure above the average temperature for January occurred in Montana and North Dakota, where it was more than 20°, and the month was more than 10° warmer than usual from east Washington to the upper Mississippi valley and the west part of the upper lake region. The only sections in which the month was cooler than usual were the east Gulf states, the Florida Peninsula, the southern plateau, and the west part of the middle plateau. At Fort Grant, Ariz., and Montrose, Colo., six years record, the month was the coolest January on record. The highest temperature reported by a regular station of the Signal Service was 88°, at Rio Grande City, Tex., and by a voluntary observer, 90°, at Fort Ringgold, Tex. The lowest temperature reported by a regular station of the Signal Service was —27°, at Saint Vincent, Minn., and by a voluntary observer, —36°, at Breckenridge, Colo. The first killing frost of the season was reported at Yuma, Ariz., on the 7th, at San Antonio, Tex., on the 11th, and at Titusville, Fla., on the 14th. Light frost injured vegetation near San Diego, Cal., on the 8th, at Colegrove, Cal., on the 9th, at Corpus Christi, Tex., on the 11th, and at Jupiter, Fla., on the 14th.

The monthly precipitation was the heaviest ever reported by Signal Service stations for January in parts of Maine, Vermont, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Texas, upper Michigan, Nebraska, and southeast Wyoming, and it was the least ever noted at Detroit, Mich., at stations in Montana, in east Washington, and at San Francisco, Cal. The precipitation was in excess of the average for January in the middle Atlantic and New England states, from the west Gulf states northeastward to Kentucky, and from the Mississippi River over the middle-eastern and southeast slopes of the Rocky Mountains, and the precipitation was deficient on the Pacific coast, over the west parts of the southern and middle plateau regions, and from the north Pacific coast to the Red River of the North Valley. On the middle-eastern and southeast slopes of the Rocky Mountains more than double the usual amount of precipitation fell. On the middle and south Pacific coasts and over the middle and northern plateau regions the monthly precipitation was less than one-half of the January average. In the Ohio Valley and Tennessee, the upper Mississippi valley, the upper lake region, in the east Gulf states, and over the Florida Peninsula the precipitation averaged about the normal. In parts of Alabama, Mississippi, and Louisiana the excessive rainfall interrupted farm work and rendered the roads impassable. The greatest depth of snowfall was reported at Cumbres and Fort Lewis, Colo., and Alta, Utah, where it exceeded 50.0 inches; it exceeded 40 inches at Calais, Me., Summit Pa., and Marquette, Mich.; 30 inches at Strafford, Vt., in south-central Pennsylvania, at mountain stations in Colorado, and at Nogal, N. Mex.; and exceeded 20 inches generally in Maine and New Hampshire, in north and south Vermont, at stations in Massachusetts, west Connecticut, central and east New York, north-central Virginia, northeast Pennsylvania, upper and north lower Michigan, at Springvale, Kans., Embarrass, Wis., northeast New Mexico, west-central Idaho, and at Cisco, Cal. On the 1st a heavy snow storm prevailed in north Missouri and Kansas. On the 7th a snow storm prevailed over east Colorado, north New Mexico, Kansas, and west Nebraska, and by the 8th had extended over Missouri to Illinois. A snow storm prevailed in Indian Territory and west Texas on the 9th. A heavy snow storm was reported in Tennessee on the 24th. On the 24th and 25th great damage was caused to electric wires in the middle Atlantic and New England states by a heavy snow storm.

On the 7th a tornado occurred near Shiner and Yoakum, Tex., and on the 31st a tornado was reported at Palo Alto, Miss. A severe thunder-storm occurred at Little Rock, Ark., on the 1st; at Athol, Mass., on the 2d; and at Wellsborough, Pa., on the 29th. A severe general storm prevailed in Louisiana, Kansas, Nebraska, and Wisconsin on the 1st; over the middle and south New England states on the 11th; along the middle Atlantic and New England coasts on the 12th; along the New York and New England coasts on the 17th; along the Atlantic coast from North Carolina to Massachusetts on the 22d; and in the middle Atlantic and New England states, 25th.

On the 3d the Monongahela River was above the danger-line at Pittsburgh, Pa., and a part of Allegheny City was flooded. At Cincinnati the Ohio River rose until the 6th, flooding basements at points on the river front. Rain and

melting snow, in connection with ice gorges in streams, caused floods in Westchester Co., N. Y., on the 10th; in west New England, east New York, and east Pennsylvania on the 11th and 12th; and in west Massachusetts, Connecticut, east New York, and east Pennsylvania on the 22d. Vegetation was reported damaged by drought at San Diego and Santa Cruz, Cal., and the month was very dry at Eola, Oregon, Mount Carmel, Utah, Farley's Camp, Ariz., and Fayette, Mo. On the 5th Green Bay was frozen at Green Bay., Wis., and on the 7th the lake was frozen at Port Huron, Mich.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for January, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars. The departure of the mean pressure for January, 1891, obtained from observations taken twice daily at the hours named, from that determined from hourly observations, varied at the stations named below, as follows:

Station.	Departure.	Station.	Departure.
New Orleans, La	+.001	Washington City	+.011
Cincinnati, Ohio	+.004	Philadelphia, Pa	+.012
Duluth, Minn	+.005	Saint Louis, Mo	−.001
Memphis, Tenn	+.005	Galveston, Tex	−.003
Cleveland, Ohio	+.007	Salt Lake City, Utah	−.005
Chicago, Ill	+.007	Santa Fé, N. Mex	−.008
Savannah, Ga	+.007	Denver, Colo	−.008
Buffalo, N. Y	+.008	Fort Assinniboine, Mont	−.013
Eastport, Me	+.008	Portland, Oregon	−.015
New York City	+.010	San Francisco, Cal	−.016
Boston, Mass	+.010	San Diego, Cal	−.020

The mean pressure was highest over adjoining parts of the middle and northern plateau regions, where it was above 30.30, whence it decreased eastward to below 29.95 over east Nova Scotia and Cape Breton Island, southeastward to about 30.15 over the Gulf States, southward to below 30.10 over the southwest part of the southern plateau and on the south Pacific coast, westward to about 30.20 on the middle Pacific coast, and northwestward and northward to below 30.10 on the extreme north Pacific coast and over the British Northwest Territory. A remarkable feature of the month was the high pressure over the middle plateau, where the mean was about .05 higher than previously noted for January within the limits of the United States.

A comparison of the pressure chart for January with that of the preceding month shows that east of a line traced from the Lake region to the southern plateau, save in Maine and the Canadian Maritime Provinces, there was a general decrease in mean pressure, and that to the westward of this line, and east of the 70th meridian, there was an increase in pressure. The most marked decrease in pressure occurred in the middle and lower Mississippi valleys and along the west Gulf coast, where it exceeded .05, and the greatest increase in pressure occurred on the north Pacific coast and at Cape Breton Island, where it was more than .15. The position of the area of highest pressure over the plateau region shifted somewhat to the northwest, with an increase of about .05 in included mean values.

The mean pressure was above the normal west of the 100th meridian, and to the eastward of that meridian it was below the normal, except over south Florida. The most marked departure above the normal occurred over the plateau region north of the 40th parallel and thence to the north Pacific coast, where it exceeded .10, and the greatest departure below the normal occurred from the middle Mississippi valley eastward to the middle Atlantic and south New England coasts, and in the interior of the Gulf States, where it was more than .05.

The monthly barometric ranges at regular stations of the Signal Service are shown in the table of Signal Service data on the last two pages of the REVIEW.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.			Duration.	Velocity per hour.	Maximum pressure change and maximum abnormal temperature change in twelve hours and maximum wind velocity.								
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.			Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.
High areas.		°	°		°	°	Days.	Miles.		Inch.			°					
I	1	48	102	5	50	63	4.0	29	Rockliffe, Ont	.86	2	Buffalo, N. Y	27	2	Port Huron, Mich	nw.	28	3
II	4	52	98	11	40	69	6.5	16	Albany, N. Y	.24	8	Father Point, Quebec	22	8	Port Arthur, Ont	nw.	24	5
III	12	39	102	15	39	71	3.5	29	do	.60	15	Northfield, Vt	25	15	Toledo, Ohio	n.	28	14
IV	14	54	114	17	46	59	3.0	36	Huron, S. Dak	.66	15	Kingston, Ont	40	16	Anticosti Island, G. S. L.	nw.	28	16
V	16	39	110	20	31	78	4.0	21	Parkersburgh, W. Va	.22	18	Nashville, Tenn	11	17	Cheyenne, Wyo	nw.	32	16
VI	22	26	84	24	44	64	2.0	36	Boston, Mass	.48	23	Raleigh, N. C	19	22	Sydney, C. B. I	sw.	30	24
VII	23	28	101	27	32	75	4.0	16	Nantucket, Mass	.60	25	Montgomery, Ala	17	24	Eastport, Me	ne.	16	27
VIII	25	50	92	27	47	59	3.0	32	Anticosti Island, G. S. L.	.26	26	Quebec, Quebec	24	26	Montreal, Quebec	ne.	16	26
IX	29	38	101	31	43	62	2.0	44	Yarmouth, N. S	.56	31	Keokuk, Iowa	18	29	Nantucket, Mass	nw.	38	31
Mean							3.4	29		.50			23				27	
Low areas.										Fall.			Rise.					
I	1	40	91	3	46	59	2.0	36	Rockliffe, Ont	.52	1	Father Point, Quebec	32	2	Grand Haven, Mich	n.	48	3
II	4	33	79	7	45	63	3.0	17	Yarmouth, N. S	.54	5	Chatham, N. B	16	5	Eastport, Me	ne.	48	5
III	6	30	107	13	47	58	7.5	20	Portland, Me	.96	12	Atlanta, Ga	22	11	Block Island, R. I	sw.	60	12
IV	12	49	115	15	49	65	3.0	35	Minnedosa, Man	.94	12	Moorhead, Minn	40	13	Fort Assinniboine, Mont.	sw.	48	12
V	14	33	105	20	49	59	6.5	22	Boston, Mass	.50	17	Sydney, C. B. I	31	18	Block Island, R. I	ne.	48	17
VI	15	49	126	19	44	78	4.5	24	Minnedosa, Man	.56	16	Valentine, Nebr	31	16	Fort Assinniboine, Mont.	sw.	52	16
VII	17	53	117	23	50	61	6.0	24	White River, Ont	.34	20	Swift Current, N. W. T	36	17	Montreal, Quebec	sw.	60	23
VIII	22	30	107	26	48	53	4.0	38	Nantucket, Mass	.80	25	Chattanooga, Tenn	13	23	Block Island, R. I	ne.	72	25
IX	23	52	116	28	42	69	4.0	25	Prince Albert, N. W. T	.46	23	Fort Assinniboine, Mont.	25	23	Valentine, Nebr	nw.	36	24
X	25	53	119	27	49	87	2.5	30	Bismarck, N. Dak	.28	26	Des Moines, Iowa	14	26	Fort Assinniboine, Mont.	sw.	36	25
XI	26	42	112	31	48	53	4.5	33	Halifax, N. S	.72	30	Chatham, N. B	18	30	El Paso, Tex	w.	48	27
XII	29	53	110	31	43	85	2.5	24	Swift Current, N. W. T	.48	29	Nashville, Tenn	25	31	Winnipeg, Man	ne.	40	30
Mean							4.2	27		.59			24				50	

AREAS OF HIGH PRESSURE.

During the month of January there was an area of marked high pressure in the region to the west of the Rocky Mountains. As will be seen by Chart II the isobar of 30.30 covers an extended region and includes a pressure of 30.35 at Winnemucca, Nev., where the highest mean January pressure previously observed was 30.26 in 1889. This permanency of high pressure in the plateau region had a very important bearing upon the weather of the entire country, causing high temperature in nearly all districts. Only one High from the Northwest Territory passed over this country. It may be considered that the Rocky Mountains formed a barrier to the progress of these

Highs eastward and the only one that came from this region, V, had the least magnitude of all those charted and caused a maximum fall of only 11° during its progress. A general idea of the characteristics of these Highs may be found in the table at the beginning of this description, and the following details are given of the individual cases noted:

I.—On the first day of the month this High of slight magnitude was situated in North Dakota; it moved slowly south for a day and then turned to the northeast, disappearing in the Gulf of Saint Lawrence on the 5th. As it approached the coast it increased in magnitude and caused a widespread cold area along the coast, with the lowest temperature of the month. The temperature reached —12° at Northfield, Vt., a. m. of 4th.

II.—This High was first noted in Manitoba p. m. of 4th. It moved very slowly in an east-southeast course and passed off the middle Atlantic coast a. m. of 11th. The highest pressure of the month (30.76) east of the Rocky Mountains was observed at Green Bay, Wis., during its passage a. m. of 8th. The pressure steadily fell from this date to the 11th, reaching 30.24 at Washington City p. m. of 10th.

III.—Beginning with the 9th and continuing 5 days the pressure was abnormally high in the plateau region each day, reaching 30.76 at Winnemucca, Nev., on the 12th. From this a tongue of high pressure appeared reaching into Texas, which formed this High a. m. of 12th. It passed east to the eastern Gulf and then northeast, passing off the New Jersey coast on the 15th.

IV.—On the morning of the 14th this High seemed to come down to the north of Montana. From there it moved nearly east, passing off Nova Scotia on the 17th. The lowest temperature of the month in the Northwest occurred during the passage of this High, at Saint Vincent, —27°.

V.—This was the only High of the month that came directly from the plateau region. On the a. m. of the 16th the area of high pressure in this region showed a slight movement toward the east and a portion of it was cut off and moved east as a distinct High, merging with the Atlantic high area on the 20th.

VI.—It is probable that this High was in the west Gulf on the a. m. of the 22d, but its first definite appearance was in the p. m. of that date in western Florida. It moved northeast along the coast and was last noted on the 24th off Nova Scotia.

VII.—This High is also a partial off-shoot from the extended high area in the plateau region. It was first noted in Texas on the 23d and moved very slowly east, merging into the Atlantic high area on the 27th. II and VII had the lowest velocity noted this month, 16 miles per hour.

VIII.—This High came down to the north of Lake Superior on the 25th. Its motion was due east, continuing most of the time in Canada. It passed over Newfoundland on the 27th.

IX.—On the 26th there were evidences of a high area of some magnitude off the middle Pacific coast. This moved very slowly northward but did not come upon the land. On the a. m. of the 29th a tongue of high pressure shot out from this high area, extending from the north Pacific coast to Texas, and in the afternoon this High was separated off. It moved very rapidly (44 miles per hour) ene. and was last noted off Nova Scotia, afternoon of the 31st.

AREAS OF LOW PRESSURE.

An examination of Chart I, which shows the paths of all storms during this month, will show that the general tendency of the storms has been toward the northeast, 9 out of the 12 storms having disappeared near Nova Scotia. This general tendency of the storms has been due in part to the position of the permanent area of high pressure in the Atlantic, which has been near the south Atlantic coast. The pressure at Bermuda has been nearly .10 above the normal. This is also, in part, an explanation of the general high temperature east of the Mississippi. Only one of the storms originated in the Pacific, five in the region to the north of Montana, three in or very near Texas, one in Utah, and one off the South Atlantic coast.

I.—This storm, XIV of the December REVIEW, had moved from Manitoba to Kansas during the last days of December. It was central in Illinois on the 1st and moved in a northeast direction, passing off the Nova Scotia coast on the 3d. This was the most extensive storm of the month. The area included within the 30.00 isobar on the a. m. of the 1st was 1,900,000 square miles and that of ½-inch rainfall in 12 hours was 200,000 square miles. On the p. m. of the 1st the 30.00 area included 2,500,000 square miles and the heavy rainfall had divided, there being one centre in Tennessee and another entirely distinct in Michigan. The area of ½-inch rainfall was 140,000 square miles.

II.—On the 4th clouds and winds indicated a disturbance of very slight intensity off the south Atlantic coast. This storm skirted the coast for 3 days and passed off Nova Scotia on the 7th.

III.—On the morning of the 6th the winds showed a very slight storm in Texas, or rather the southern extremity of a trough of low pressure extending from Montana to Texas. It had a motion east to Louisiana for 5 days and from there ne., passing off the New Brunswick coast on the 13th. On the a. m. of the 11th the area within the 30.00 isobar was 1,700,000 square miles, and that of ½-inch rainfall in 12 hours, 40,000 square miles. As this storm approached the Atlantic coast its dimensions were markedly increased. On the morning of the 12th it stretched in oval shape from the north of Newfoundland to the south of Florida, and east to west from the 100th meridian to Bermuda. The pressure at Portland, Me., was 28.68, which has been equalled only once before at this station, on February 2, 1876.

IV.—This storm originated in the territory to the north of Montana and the path of its centre was just on the border of the United States till it reached Maine on the 14th. It disappeared in the Gulf of Saint Lawrence on the 15th. Very slight precipitation attended its course, the largest amount in 12 hours being 0.44 at Kingston, Ont., on the 14th. The lowest pressure was 29.38, at Marquette, Mich.

V.—Clouds and winds show a slight disturbance in Texas on the 14th, and by the morning of the 15th it had moved to the Gulf. As this storm approached the Atlantic, High III had moved to the south Atlantic, causing a pressure of 30.45 at Bermuda, and this high pressure deflected the storm along the Atlantic coast. It reached Newfoundland on the 20th.

VI.—This is the only storm of the month that came from the Pacific coast, and was of slight intensity throughout. It was first noted off Washington on the 15th. It moved a little south of east and was last noted over Lake Ontario on the 19th, as on the succeeding day it was merged in VII.

VII.—A disturbance of slight intensity was noted to the north of Montana on the 17th, the appearance being as though an increasing pressure in the rear of VI had prevented its coalition with this storm. The two storms moved separately till the 20th, when they were merged in one over Lake Michigan. On the p. m. of the 20th a trough of low pressure extended from the principal locus over Michigan to the west Gulf and two days later a circular storm of great extent had developed over Pennsylvania. This storm disappeared in the Gulf of Saint Lawrence on the 23d.

VIII.—This storm developed in west Texas on the 22d and moved east to the west Gulf, then northeast to Newfoundland on the 26th. The intensity of this storm was greatly increased as it approached and passed up the coast, being deflected north by the permanent Sargossa Sea high area. Freezing weather attended this storm and a large amount of sleet and snow fell in the middle and north Atlantic states on the 25th, impeding and interrupting telegraphic communication. See "Local storms."

IX.—This storm moved down to the north of Montana on the 23d. Its course was slightly south of east, passing off the Massachusetts coast on the 27th. The lowest pressure observed was 29.70, and the greatest precipitation in 12 hours, 0.24.

X.—Like the last this storm was of very slight intensity.

Its course was east, and it was last noted over Lake Superior on the 27th.

XI.—This storm may be regarded a secondary from the last and was first noted in Utah on the 26th. Its course at the first was to the southeast to Texas and then east-northeast to Newfoundland on the 31st. This storm was of wide extent and was remarkable in that the greatest precipitation in 12 hours was only 0.40, at Sydney, C. B. I., on the 30th.

XII.—This formed in the rear of the last storm and was first noted to the north of Montana on the 29th. It moved to the southeast and on the last day of the month was central in Michigan. As this storm approached the Mississippi Valley a long trough of low pressure was formed extending from Texas to Minnesota. The heaviest rainfall of the month attended this storm, there having fallen 3.24 in 12 hours at Memphis, Tenn., on the 31st.

NORTH ATLANTIC STORMS FOR JANUARY, 1891 (pressure in inches and millimetres; wind-force by Beaufort scale).

The paths of the depressions that appeared over the north Atlantic Ocean during January, 1891, are shown on Chart I. These paths have been determined from international observations by captains of ocean steamships and sailing vessels received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

Eight storms have been traced for January, 1891, the average number for the corresponding month of the last 8 years being 10. Of the storms traced for the current month 6 were continuations of storms which first appeared over the North American continent, and 2 apparently originated over the western part of the ocean. One storm traversed the ocean from coast to coast. Storms of exceptional seasonal severity were not reported, and the weather was unusually fine over the eastern part of the ocean. A notable feature of the month was the high barometric pressure which prevailed over the eastern part of the ocean from the 12th to 15th, when readings above 31.00 (787) were noted west of the British Isles.

The month opened with a storm central northeast of Newfoundland, in which region it was located December 31st. Passing slowly eastward, attended by fresh to strong gales and pressure falling to about 29.30 (744) on the 2d, this storm reached the 25th meridian on the 4th, after which it apparently dissipated. On the morning of the 3d a storm of considerable strength was central over the Gulf of Saint Lawrence, whence it moved to southeast of Newfoundland by the morning of the 4th with an appreciable loss of energy, after which it apparently dissipated. On the morning of the 5th a storm appeared between Bermuda and the New England coast, with pressure below 29.50 (749) and heavy gales, whence it moved slowly east of north and reached Nova Scotia on the 7th, in which region it apparently disappeared by an increase of pressure. On the 8th a storm appeared off the southwest edge of the Banks of Newfoundland, and thence moved northeastward to the 40th meridian by the 10th, with fresh to strong gales and pressure falling below 29.30 (744), after which it disappeared north of the region of observation, where its presence was indicated by reports of the following date. On the 8th the pressure was low over the British Isles, and a storm was apparently central over or near the Hebrides. On this date a storm moved off the Texas coast over the northwest part of the Gulf of Mexico, and on the 9th was central off the middle Gulf coast. On the 10th a storm was central over the west part of the Gulf of Mexico, whence it moved northeastward and during the 11th advanced over the central valleys to the lower lake region. Severe gales were encountered off the south and middle Atlantic coasts attending the passage of this storm. During the 12th this storm passed over New England and the Canadian Maritime Provinces, with pressure below 28.70 (729) and heavy gales off the coast. At Saint John, N. B., the tide was reported the highest on record; wharves were flooded, warehouses were damaged, and low lands in the rear of the city were submerged. By the 13th this storm had disappeared north of Newfoundland beyond the region of observation. On this date an area of remarkably high pressure occupied the eastern part of the ocean, where readings above 30.80 (782) were reported from the Irish coast to the 25th meridian. By the 14th the pressure in that region had risen above 31.00 (787), and the pressure continued above that point along the 50th parallel between the 10th and 25th meridians during the 15th, after which there was a gradual decrease in pressure until the 20th, and during the remainder of the month the pressure continued low over and near the British Isles.

On the evening of the 15th a storm was central off the middle Gulf coast, and by the evening of the 16th had moved off the south Atlantic coast. By the 17th this storm had advanced off the middle Atlantic coast, and on the 18th was central off the New England coast, whence it passed to the south of Nova Scotia by the 19th, and on the morning of the 20th was southeast of Nova Scotia, with pressure about 29.30 (744) and fresh gales. From that region the storm moved east-northeast and disappeared north of the British Isles after the 23d, attended throughout by fresh to strong gales, and pressure falling to about 29.20 (742) on the 23d. On the 23d a storm which had advanced from the west Gulf, where it was central the evening of the 20th, moved eastward over the Gulf of Saint Lawrence, and by the 24th had advanced to the 40th meridian, with fresh to strong gales, after which it disappeared in the direction of Iceland. On the evening of the 24th a storm of considerable energy which advanced from the west Gulf was central on the North Carolina coast, whence it moved rapidly northeastward, passing south of Nova Scotia during the 25th, crossing Newfoundland during the early part of the 26th, and disappearing in the direction of Iceland after the 27th. This was the most destructive storm of the month along the coast of the United States, the most notable damage being the prostration of telegraph wires. The storm increased in energy as it advanced over the Canadian Maritime Provinces, where the pressure fell below 29.00 (737) at Saint John's, N. F., on the 26th, and the influence of the storm was felt over the middle and eastern parts of the ocean until the close of the month. On the morning of the 30th a storm which had advanced from the Lake region was central north of Nova Scotia, whence it moved over Newfoundland by the morning of the 31st, with pressure below 29.00 (737) and fresh to strong gales.

OCEAN ICE IN JANUARY.

On the 28th 3 large icebergs were reported in N. 46° 30′, W. 52° 46′, and on the 31st patches of soft ice were observed in N. 45° 50′, W. 59° 20′. In January, 1882 to 1888, inclusive, Arctic ice in small quantities was encountered east of Newfoundland, but in no case was it reported south of the 45th parallel. In 1889 no ice was reported. In 1890 vast fields of ice and enormous icebergs were reported over and near the Grand Banks north of the 43d parallel.

FOG IN JANUARY.

The limits of fog-belts west of the 40th meridian, as determined from reports of shipmasters, are shown on Chart I by dotted shading. Near the Banks of Newfoundland fog was reported on 5 dates; between the 55th and 65th meridians on 6 dates; and west of the 65th meridian on 2 dates. Compared with the corresponding month of the last 3 years the dates of occurrence of fog near the Grand Banks numbered the same as the average; between the 55th and 65th meridians 4 less than the average; and west of the 65th meridian 7 less than the average. On the dates fog was reported east of the 55th

meridian it occurred with the approach of general storms from the westward. On the dates fog was reported west of the 55th meridian it occurred with the approach or passage to the northward of general storms. On the 1st, 2d, 11th, 12th, 17th, 18th, 24th, and 29th, dense fog was reported at points along the New England, New York, and New Jersey coasts with the approach of general storms. On the 1st marine traffic was almost entirely suspended in the afternoon at Baltimore, Md., by dense fog. Dense fog prevailed at New York City on the 1st and 2d, and navigation and traffic on railroads were almost entirely suspended. Dense fog prevailed at New Haven, Conn., on the 2d, delaying or stopping New York boats. On these dates a general storm of marked energy advanced from the middle Mississippi valley to east New England.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for January, 1891, is exhibited on Chart II by dotted isotherms. In the table of Signal Service data the monthly mean temperature and the departure from the normal are given for regular stations of the Signal Service. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Signal Service represents the mean of the maximum and minimum temperatures.

The mean temperature was lowest over south Florida and in the extreme lower Rio Grande valley, where it was above 60, and the mean readings were above 50 along the Gulf coast, along the Atlantic coast south of Charleston, S. C., in southwest Arizona and south California, and along the immediate Pacific coast south of the 40th parallel. The mean temperature was lowest in Manitoba, north Ontario, and in the lower Saint Lawrence valley, where it was below 10; the mean was also below 10 at elevated stations in Colorado. The mean values were below 20 north of a line traced from the southwest coast of the Gulf of Saint Lawrence south of west to north Vermont, thence irregularly westward to south Minnesota, and thence northwest over the British Possessions north of Montana, and in areas in the middle and east plateau regions.

The mean temperature was above the normal, except in the east Gulf states and Florida, and in the southern and the west parts of the middle plateau regions. The greatest departure above the normal occurred in north-central Montana and the British Possessions to the northward, where it exceeded 20, and the departure was more than 10 from east Washington to the upper Mississippi valley and the west part of the upper lake region. The most marked departure below the normal was noted in the southeast plateau region and at Key West, Fla., where it equalled or exceeded 4.

From the north Pacific coast to the Red River of the North Valley the current month was the warmest January on record, the mean temperature varying from 5 above the normal on the north Pacific coast to more than 20 above the normal in Montana and North Dakota. The warmest January along the middle and south Atlantic and east Gulf coasts occurred in 1890, when the mean temperature was 9 to 14 above the normal in those districts; over the middle plateau in 1887, when the mean temperature was 3 to 5 above the normal; and from the middle and southern plateau regions northeast and east, save along the Atlantic coast south of New England and on the east Gulf coast, in 1880, when the mean temperature was 12 to 14 above the normal in east Texas, 14 to 18 above in the Mississippi Valley, and 12 to 16 above in the Lake region; in New England the warmest January was noted in 1880 and 1889, when the mean temperature was 8 to 12 above the normal.

At Fort Grant, Ariz., 13 years record, and at Montrose, Colo., 6 years record, the current month was the coldest January on record, the mean temperature being 3 below the normal at Fort Grant, and 6 below at Montrose. At stations on the middle and south Pacific coasts and in the west part of the middle plateau the coldest January was noted in 1890, when the mean temperature was 4 to 6 below the normal on the California coast, and 8 below the normal at Winnemucca, Nev.; in New England, and from the north Pacific coast to central Montana, in 1888, when the mean temperature was 5 to 7 below the normal in New England, and 4 to 10 below the normal from west Montana to the north Pacific coast; from the southeast slope of the Rocky Mountains to the Atlantic coast between the 33d and 39th parallels in 1886, when the mean temperature was 5 to 8 below the normal in that region; in the lower Rio Grande valley in 1881, when the mean temperature was 6 to 8 below the normal; in the Lake region and thence to the New Jersey coast, and from the Missouri Valley over the middle-eastern slope of the Rocky Mountains, in 1875, when the mean temperature was 6 to 10 below the normal in the Lake region, 5 to 8 below in New Jersey and Pennsylvania, and 10 to 12 below in the middle Missouri valley and on the middle-eastern slope of the Rocky Mountains.

In January, 1891, when the mean temperature was the highest on record for that month over the northwest part of the country, it was the lowest ever reported at stations in the south part of the plateau region. In 1890, when the warmest January on record was noted on the middle Atlantic and east Gulf coasts, the month was the coolest January reported at stations on the middle and south Pacific coasts.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for January for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for January, 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for January, during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of Jan.	(2) Length of record.	(3) Mean for Jan., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for Jan.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	*Years*	°	°	°		°	
Lead Hill	Boone	33.1	9	38.3	+ 5.2	45.6	1890	24.2	1886
California.									
Sacramento	Sacramento	46.5	25	41.0	— 5.5	52.7	1873	38.4	1890
Connecticut.									
Middletown	Middlesex	24.9	23	29.0	+ 4.1	33.7	1890	17.3	1888
Florida.									
Merritt's Island	Brevard	62.9	9	59.5	— 3.4	69.8	1882	55.4	1886
Georgia.									
Forsyth	Monroe	48.2	17	48.8	+ 0.6	59.4	1880	40.8	1884
Illinois.									
Peoria	Peoria	24.4	35	32.2	+ 7.8	40.9	1880	13.5	1857
Riley	McHenry	17.8	35	25.8	+ 8.0	33.2	1880	5.5	1875
Indiana.									
Vevay	Switzerland	31.2	25	36.4	+ 5.2	47.2	1880	23.0	1884
Iowa.									
Cresco	Howard	9.1	19	22.4	+13.3	26.1	1880	— 1.3	1883
Monticello	Jones	16.1	22	25.6	+ 9.5	32.9	1880	6.0	1883
Logan	Harrison	18.0	17	30.2	+12.2	34.4	1880	7.1	1886
Kansas.									
Lawrence	Douglas	26.5	28	32.4	+ 5.9	41.2	1880	14.3	1886
Wellington	Sumner	25.0	12	36.1	+11.1	40.4	1880	17.6	1886
Louisiana.									
Grand Coteau	Saint Landry	52.6	8	50.2	— 2.4	64.0	1890	47.4	1886
Maine.									
Orono	Penobscot	15.0	17	21.0	+ 6.0	24.7	1889	8.2	1875
Maryland.									
Cumberland	Allegany	29.9	32	33.2	+ 3.3	40.7	1890	19.6	1865, '67

Deviations from normal temperature—Continued.

State and station.	County.	(1) Normal for the month of Jan.	(2) Length of record.	(3) Mean for Jan., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for Jan.			
						Highest.	Year.	Lowest.	Year.
Massachusetts.		°	Years	°	°	°		°	
Amherst	Hampshire	23.5	55	27.4	+ 3.9	32.3	1889	13.5	1857
Newburyport	Essex	24.2	14	29.0	+ 4.8	33.1	1880	13.7	1857
Somerset	Bristol	26.8	18	32.7	+ 5.9	35.7	1880	19.4	1888
Michigan.									
Kalamazoo	Kalamazoo	21.6	15	29.2	+ 7.6	36.0	1880	14.0	1881
Thornville	Lapeer	22.2	14	28.4	+ 6.2	35.6	1880	15.6	1881
Minnesota.									
Minneapolis	Hennepin	8.3	26	20.7	+12.4	23.2	1880	— 4.4	1875
Montana.									
Fort Shaw	Lewis & Clarke	15.9	21	33.8	+17.9	33.8	1891	— 2.2	1875
New Hampshire.									
Hanover	Grafton	17.4	53	21.2	+ 3.8	26.5	1838	6.8	1857, '58
New Jersey.									
Moorestown	Burlington	29.4	27	33.9	+ 4.5	40.1	1890	22.2	1867
South Orange	Essex	28.8	30	31.9	+ 3.1	37.6	1880	23.8	1884
New York.									
Cooperstown	Otsego	20.3	37	23.4	+ 3.1	31.6	1880	10.3	1857
Palermo	Oswego	20.8	37	24.9	+ 4.1	29.4	*	11.6	1888
North Carolina.									
Lenoir	Caldwell	36.2	19	38.0	+ 1.8	46.5	1890	30.2	1882
Ohio.									
N'th Lewisburgh	Champaign	27.5	59	31.1	+ 3.6	41.0	1880	14.0	1856, '57
Wauseon	Fulton	23.1	21	27.9	+ 4.8	37.7	1890	12.2	1875
Oregon.									
Albany	Linn	37.3	13	40.9	+ 3.6	43.8	1887	22.8	1868
Eola	Polk	37.0	20	40.8	+ 3.8	42.7	1874	29.7	1875
Pennsylvania.									
Dyberry	Wayne	21.1	26	24.9	+ 3.8	31.6	1890	13.9	1865
Grampian Hills	Clearfield	23.1	26	27.0	+ 3.9	35.0	1880	16.1	1867
Wellsborough	Tioga	25.7	11	25.7	0.0	35.8	1890	19.1	1884
South Carolina.									
Statesburgh	Sumter	45.5	9	46.1	+ 0.6	54.6	1890	39.0	1886
Tennessee.									
Austin	Wilson	37.2	22	40.5	+ 3.3	53.1	1880	28.2	1884
Texas.									
New Ulm	Austin	50.7	17	50.7	0.0	63.7	1880	34.8	1875
Vermont.									
Strafford	Orange	16.0	17	22.2	+ 6.2	25.4	1889	6.9	1888
Virginia.									
Birdsnest	Northampt'n	39.8	23	41.2	+ 1.4	49.6	1890	33.7	1881
Washington.									
Fort Townsend	Jefferson	37.8	19	42.3	+ 3.6	55.4	1888	29.6	1869
Wisconsin.									
Madison	Dane	16.8	28	25.2	+ 8.4	33.6	1890	4.1	1875

* 1863, 1880, and 1890.

MAXIMUM AND MINIMUM TEMPERATURES.

The highest temperature reported by a regular station of the Signal Service was 88, at Rio Grande City, Tex., on the 30th. The maximum temperature was 80, or above, at Tampa and Jacksonville, Fla., Brownsville, Tex., and Los Angeles, Cal., and was above 70 in the east Gulf states, along the Atlantic coast south of the 35th parallel, in the Rio Grande Valley, in south and southwest California, southwest Arizona, and in the middle Sacramento valley. Over the north part of the upper lake region and the east part of the middle plateau the maximum temperature was below 40, and it was below 50 north of a line traced from the south Maine coast westward to south Iowa, and thence northwestward to northwest Montana. The reports of United States Army post surgeons and voluntary observers show the following maximum temperatures in states and territories where temperature rising to or above 80 was reported: Fort Ringgold, Tex., 90; Pomona, Cal., and Eustis, Fla., 88; Tucson, Ariz., Hattiesburgh, Miss., and several stations in Louisiana, 81; Citronelle, Ala., and Hardeeville, S. C., 80.

The lowest temperature reported by a regular station of the Signal Service was —27, at Saint Vincent, Minn., on the 15th. The minimum temperature was below —10 in north Vermont, extreme east upper Michigan, central and north Minnesota, North Dakota, northeast Montana, and in areas in northeast Utah and central Colorado, and the temperature fell below 0 (zero) north of a line traced along the Maine coast, thence westward north of the lower lakes to south Minnesota, thence southwest to south-central New Mexico, thence northwest to northwest Nevada, and thence east of north over the northern plateau. The highest minimum temperature, 53, was reported at Key West, Fla., and the minimum readings were above 30 along the immediate south Atlantic, Gulf, and Pacific coasts. The reports of United States Army post surgeons and voluntary observers show the following minimum temperatures in states and territories where minimum temperature falling to or below 0 (zero) was reported: Breckenridge, Colo., —36; West Milan, N. H., —30; Pokegama Falls, Minn., —26; Elko (2), Nev., —25; Grafton and Fort Pembina, N. Dak., —24; East Berkshire, Vt., and Oelrichs, S. Dak., —23; Choteau, Mont., —22; Fairfield, Me., —20; Boca, Cal., Henry's Lake, Idaho, and Antelope Spring, N. Mex., —19; Ogdensburgh, N. Y., —18; Hayward, Wis., —16; Fort Fetterman, Wyo., and Roscommon, Mich., —15; Silver Lake, Oregon, —14; Fort Du Chesne, Utah, —13; Fort Niobrara and North Loup, Nebr., —10; Carroll, Iowa, —8; Cooleys, Ariz., —7; New Hartford (1), Conn., and several elevated stations in Pennsylvania, —4; Lakin and Spearville, Kans., —3; several stations in Massachusetts, —2; Adrian and Pickering, Mo., —1; Bolar, Va., and Warren and Winnebago, Ill., 0 (zero).

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart IV by a line traced over the Florida Peninsula in latitude about 29° and a second line traced just inside the west Gulf coast line. The western limit of freezing weather is shown on this chart by a line traced along the immediate north Pacific coast and a second line traced inside the Pacific coast line south of the 40th parallel.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature are given in the table of Signal Service data. The greatest monthly ranges of temperature occurred over the north-central part of the country, where they exceeded 60, whence they decreased eastward to less than 40 on the south New England coast, southeastward to less than 30 over extreme south Florida, southward to less than 40 on the middle west Gulf coast, southwestward to less than 50 over the middle and south plateau and on the south Pacific coast, and westward to less than 30 on the north Pacific coast.

FROST.

The first killing frost of the season was reported at Yuma, Ariz., 7th; at San Antonio, Tex., 11th; and at Titusville, Fla., 14th.

The first black frost of the season was reported at Jacksonville, Fla., 14th, and at Aiken, S. C., 18th.

The first light frost of the season was reported at San Diego, Cal., 8th; at Colegrove, Cal., 9th; at Corpus Christi, Tex., 11th; and at Jupiter, Fla., 14th. Light frost occurred as far south as Lee county, Fla., on the 5th, 6th, 14th, 15th, 19th, 20th, and 25th; along the immediate Gulf coast on a number of dates; in the lower Rio Grande valley on the 24th; at Yuma, Ariz., on the 1st, 2d, 7th, and 8th; and at San Diego, Cal., on the 8th and 9th. The light frost of the 9th at San Diego, Cal., injured plants in the Cajon Valley, and the light frost of the 14th at Jupiter, Fla., injured vegetation.

THE COLD WINTER OF 1890–1891 IN EUROPE.

The period of low temperature in central and western Europe which continued through the greater part of the past winter was probably the most persistent in the annals of European meteorology. A determination of the causes which contributed to produce the cold spell is of paramount importance to the science of meteorology, and this work will doubtless be undertaken by European meteorologists. It is not within the province of this publication, nor is it possible at the present time and with the data at hand, to attempt more than a brief review of the general meteorological conditions over a considerable area of the northern hemisphere during the prevalence of the great cold. A recognized fact in connection with abnormally high barometric pressure and unusually low temperature is their dependence upon each other, and an interesting line of investigation is that which has for its object the confirmation of the theory that abnormal cold over one portion of the northern hemisphere is compensated in some degree by an excess of

temperature over some other. For reasons above stated general meteorological features only can be presented in this brief reference.

In the second decade of December the barometric pressure was markedly high over east-central and central Europe, the 11th, 16th, and 17th being the only dates the area of high pressure was central west of the 20th meridian of east longitude. During this period the pressure rose above 30.30 and the temperature fell below —10° within the area of highest pressure. From the 19th to 24th the pressure was above 30.90 over northeast Russia, and on the 24th the temperature was below —20° in that region. On the 25th and 26th the pressure was above 31.10 in central Russia (the highest pressure noted in Europe during the period under discussion). During the last few days of the month the area of highest pressure occupied west-central Europe with pressure varying from 30.30 to 30.90. During this month the Asiatic area of high pressure seemed to have shifted its position to the westward, and the pressure was apparently below the normal over central Asia. During the third decade of the month the area of highest pressure shifted its position from east-central and central Europe to west-central Europe. The pressure for the month was above the normal over the south-central part of the United States, and it was below the normal over southeast and south-central Europe, over the north Atlantic Ocean along the trans-Atlantic steamship routes, over the Canadian Maritime Provinces, along the Atlantic coast of the United States, and over the northwest and extreme southwest parts of the United States. The European cold wave seemed to extend westward in the middle latitudes over the northeast part of the United States, while over the north-central part of the United States there was a marked excess of temperature.

During the early part of January the area of high pressure occupied a more southerly position than in December, and the pressure was high over the British Isles. On the 8th and 9th the pressure was above 30.70 over central Europe, and on the 10th the pressure was above 30.70 over southeast Europe, and an area of high pressure occupied west-central Europe. After the date last named the area of high pressure seemed to divide, one part receding into Asia, and the other showing an inclination to settle to the westward and southwestward over the British Isles. On the 14th and 15th the pressure was above 31.00 along the trans-Atlantic steamship routes east of the 25th meridian. During the latter part of January the mean pressure was generally low over the British Isles, and the area of high pressure was confined to east-central Europe, whence it extended over central Asia. In this month the mean pressure was below the normal over extreme southeast Europe, and generally over the United States and Canada east of the 100th meridian. The mean pressure was above the normal over the east part of the north Atlantic Ocean, between the 40th and 55th parallels, and over the west and extreme southeast parts of the United States; and in the middle plateau region the mean pressure was the highest ever noted in the United States for January. The mean temperature was the highest on record for January over the northwest part of the United States, and it was above the normal in parts of central Asia and southeast Europe. The European cold did not extend westward to the American continent, where the month was warmer than usual, except in the south-central and extreme southeast parts.

The following are among the lowest temperatures noted in western Europe during the past winter: —2° at Berlin, January 18th; —2° at Münich, January 17th; —2° at Vienna, December 30th; 0 at Stockholm, January 10th; 3° at Brussels, December 30th; 8° at Paris, January 20th; 14° at London, December 25th; 21° at Leith, January 8th; 30° at Lisbon, January 19th; and 28° at Algiers, January 19th. During the period of 41 days from December 13th to January 22d the minimum temperature fell below the freezing point on 41 days at Vienna, Münich, and Stockholm; on 40 days at London and Brussels; on 39 days at Berlin; on 37 days at Paris; on 25 days at Leith; on 6 days at Rome; on 2 days at Algiers; and on one day at Lisbon. Over the south part of England, where the mean temperature for December was more than 10° below the normal, the cold spell was reported the most persistent since 1814, although the temperature was not exceptionally low nor the snowfall remarkably heavy. Over the north part of the British Isles the mean temperature was above the normal. Over the west part of the continent of Europe the winter will number among the most severe of the century. In Austria the cold was unprecedented in a quarter of a century. The severer winters of the century in western Europe were those of 1807–1808, 1812–1813, 1813–1814, and 1829–1830, the last being the most severe. Other cold spells occurred in January, 1838, February, 1845, February, 1855, December, 1879, and January, 1881.

Among notable features of the past winter were the unusually small number of cold waves of marked severity which reached the Atlantic coast of the United States from the interior of the continent; the marked tendency of north Atlantic storms to pass southeastward over the Bay of Biscay, southeast Europe, and the Mediterranean Sea in December, to which course they were probably deflected by the area of high pressure over central Europe; and the northerly course of north Atlantic storms over the eastern part of the ocean in January, in which month the area of high pressure occupied a more southerly and westerly position than in December, and the storms were apparently deflected to a northerly course before reaching European waters. Referring to the period of cold in Europe, Mr. C. J. Lyons, in charge of the weather service of the Hawaiian Government Survey at Honolulu, reports that the characteristics of the winter at that place were the unusual persistence of trade winds and a tendency in variable winds to the northwest quadrant rather than the southwest quadrant, resulting in an enormous disproportion of rainfall on the northeast coasts and mountain sides. The barometric pressure was only about .006 above the normal, and the temperature very slightly in excess, owing to the prevalence of the trades.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for January, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of Signal Service data the total precipitation and the departure from the normal are given for each Signal Service station. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The heaviest precipitation occurred on the north Pacific coast, where 15.93 fell at Neah Bay, Wash. The monthly precipitation exceeded 10.00 in southeast Massachusetts, west Connecticut, southeast New York, north New Jersey, north-central Alabama, central and southwestern Mississippi, the interior of Louisiana and eastern Texas, and on the central Oregon coast; it exceeded 8.00 over central Nova Scotia, from southeast New York and east Pennsylvania over north New Jersey, north Connecticut, and a part of southeast Massachusetts, in north-central Alabama, from central Mississippi over east Texas, and on the central Oregon and extreme north Washington coasts. No precipitation was reported in the lower Colorado and lower Gila valleys and thence over southeast California to

about the 37th parallel, and less than 1.00 was reported in and south of the Sacramento Valley, Cal., generally over the middle and southern plateau regions, save in central Colorado and from north New Mexico to east-central Arizona, on the northeast and southeast slopes of the Rocky Mountains, from Lake Superior westward over Montana and southward in the Missouri Valley to Nebraska, in an area extending from northeast Indian Territory over Missouri to south-central Illinois, and in east-central Florida.

The monthly precipitation was irregularly distributed. It was in excess of the January average in the middle Atlantic and New England states, on the coast of southern North Carolina, in extreme south Florida, from the west Gulf states northeastward to Kentucky, northward west of the Mississippi River to the Red River of the North Valley, and northwestward over the east part of the middle and southern plateau regions. On the Pacific coast and thence over the west parts of the southern and middle plateau regions, and from the north Pacific coast eastward to the Red River of the North Valley, the precipitation was deficient. The greatest excess in precipitation occurred on the Maine coast and in the interior of the west Gulf states, where it exceeded 3.00, and the most marked deficiency was noted along the Pacific coast, where it was more than 2.00, and at San Francisco, Cal., the deficiency was 4.00.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: middle-eastern slope of the Rocky Mountains, 294 per cent.; southeast slope of the Rocky Mountains, 220 per cent.; New England, 155 per cent.; west Gulf states, 164 per cent.; Missouri Valley, 144 per cent.; Rio Grande Valley, 142 per cent.; middle Atlantic states, 129 per cent.; northeast slope of the Rocky Mountains, 113 per cent.; east Gulf states, 105 per cent.; and upper lake region, 102 per cent. In districts where the precipitation was deficient the percentage of the normal was about as follows: middle Pacific coast, 21 per cent.; south Pacific coast, 37 per cent.; northern plateau, 45 per cent.; middle plateau, 59 per cent.; extreme northwest, 63 per cent.; north Pacific coast, 70 per cent.; south Atlantic states, 77 per cent.; lower lake region, 80 per cent.; southern plateau, 81 per cent.; Florida Peninsula, 91 per cent.; Ohio Valley and Tennessee, 98 per cent.; upper Mississippi valley, 99 per cent.

The heaviest precipitation ever noted for January occurred at Strafford, Vt., Portland and Orono, Me., Albany and Cooperstown, N. Y., Middletown, Conn., Amherst and Somerset, Mass., South Orange, N. J., Dyberry, Pa., Palestine and San Antonio, Tex., Marquette, Mich., Omaha, Nebr., and Cheyenne, Wyo., in 1891, when the departure above the normal varied from over 4.00 at Portland, San Antonio, and Palestine, to less than 2.00 at Omaha and Cheyenne; from east-central Missouri to central Ohio in 1890, when the excess was 2.00 to 7.00; in central and east Arizona in 1886, when the excess was 2.00 to 4.00; in north Louisiana in 1885, when the excess was more than 7.00 at Shreveport; on the North Carolina coast and in Colorado and southeast Wyoming in 1883, when the excess was 2.00 to 7.00 on the North Carolina coast, and more than 1.00 in Colorado; from the lower Mississippi valley northeastward to Maryland in 1882, when the excess was 7.00 to 8.00 in the lower Mississippi valley, 7.00 to 11.00 in Tennessee, and 2.00 to over 4.00 in Maryland and the District of Columbia; along the middle Pacific coast and on the South Carolina and southern North Carolina coasts in 1878, when the excess was 5.00 to 15.00 on the middle Pacific coast, and over 3.00 on the south Atlantic coast; in the middle and lower Ohio valley in 1876, when the excess was 6.00 to 11.00; and in the lower Missouri valley and thence over southeast Iowa in 1874, when the excess was over 2.00.

The least precipitation ever noted for January by Signal Service observers occurred at Detroit, Mich., Fort Assinniboine and Helena, Mont., Spokane Falls, Wash., and San Francisco, Cal., in 1891, when the departure below the normal varied from 4.00 at San Francisco to about 1.00 at Detroit, Fort Assinniboine, and Helena. At Yuma, Ariz., 16 years record, no precipitation was reported and no precipitation was noted at that station in January, 1878, 1881, and 1887. At Keeler, Cal., 6 years record, the current month was the first January for which precipitation has not been reported. The least precipitation for January occurred along the east Gulf coast and thence northeastward inside the Atlantic coast line to southeast Virginia in 1890, when the deficiency was 4.00 to 5.00 on the east Gulf coast, 3.00 to 4.00 in the south Atlantic states, and 2.85 at Norfolk, Va.; on the middle and north Pacific coasts and over the south part of the northern plateau in 1889, when the deficiency was 3.00 to 4.00 on the middle Pacific coast, 4.00 to 5.00 on the north Pacific coast, and 1.00 to 2.00 over the northern plateau; over the Florida Peninsula in 1888, when the deficiency was 2.00 to 3.00; from Texas and Indian Territory westward to the south Pacific coast, except in southeast Arizona, in 1887, when the deficiency was generally less than 1.00 in Texas and Indian Territory and over 2.00 on the south Pacific coast; from north Montana to northeast Washington in 1884, when the deficiency was about 1.00; in southeast Arizona and from north Louisiana to southwest Illinois in 1881, when the deficiency was 1.00 to nearly 3.00 in the Mississippi Valley and about 1.00 in southeast Arizona; from central Mississippi northeastward to east Tennessee in 1880, when the deficiency was 1.00 to over 3.00; from northeast Iowa to the southwest coast of Lake Michigan in 1879, when the deficiency was 1.00 to 2.00; along the south Atlantic and a part of the middle Atlantic coast in 1876, when the deficiency was 3.00 to 5.00; from the lower Missouri Valley over southeast Iowa and from west Tennessee north-northeast over south Pennsylvania, Maryland, and the District of Columbia in 1872, when the deficiency was 1.50 in southeast Iowa, and 2.50 to 3.50 from Tennessee to Maryland.

In 1890, when the precipitation was the heaviest ever noted for January from east-central Missouri to central Ohio, it was the least ever reported along the east Gulf coast and over the interior of the south Atlantic states; in January, 1876, when the precipitation was the heaviest reported for that month along the middle and lower Ohio River, it was the least ever noted for January along the south Atlantic and parts of the Virginia and New Jersey coasts.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for January for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for January, 1891; (4) the departure of the current month from the average; (5) and the extremes for January during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Jan.	(2) Length of record.	(3) Total for Jan., 1891.	(4) Departure from average.	(5) Extremes for Jan.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Lead Hill	Boone	3.11	9	2.25	−0.86	7.37	1890	1.33	1887
California.									
Sacramento	Sacramento	3.87	37	0.58	−3.29	15.04	1862	0.19	1889
Connecticut.									
Middletown	Middlesex	4.24	29	9.24	+5.00	9.24	1891	1.45	1876
Florida.									
Merritt's Island	Brevard	3.75	13	1.79	−1.96	10.45	1878	0.56	1890
Georgia.									
Forsyth	Monroe	5.11	17	7.88	+2.77	10.08	1883	2.22	1880
Illinois.									
Peoria	Peoria	1.73	33	1.68	−0.05	4.27	1862	0.20	1872
Riley	McHenry	1.97	40	2.22	+0.25	5.96	1876	0.45	*
Indiana.									
Logansport	Cass	2.18	16	1.67	−0.51	5.69	1890	0.23	1881
Vevay	Switzerland	4.13	24	4.21	+0.08	9.03	1876	0.75	1872
Iowa.									
Cresco	Howard	1.35	19	1.80	+0.45	3.72	1886	0.38	'72,'84
Monticello	Jones	1.66	36	1.25	−0.41	3.77	1886	0.29	1865
Logan	Harrison	1.27	22	1.79	+0.52	3.10	1881	0.10	1872
Kansas.									
Lawrence	Douglas	1.28	26	1.43	+0.15	3.05	1878	0.12	1875
Wellington	Sumner	0.93	12	1.95	+1.02	2.40	1890	0.18	1881

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of Jan.	(2) Length of record.	(3) Total for Jan., 1891.	(4) Departure from average.	(5) Extremes for Jan.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Louisiana.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Grand Coteau	St. Landry ..	6.37	8	10.43	+4.06	13.30	1883	2.52	1887
Maine.									
Orono	Penobscot ...	4.58	21	7.66	+3.08	7.66	1891	2.00	1875
Maryland.									
Cumberland	Allegany	2.12	19	2.93	+0.81	3.90	1878	0.30	1887
Massachusetts.									
Amherst	Hampshire ..	3.34	55	8.17	+4.83	8.17	1891	0.99	1849
Newburyport	Essex	3.62	12	6.86	+3.24	7.76	1886	1.60	1875
Somerset	Bristol	4.32	18	8.94	+4.62	8.94	1891	1.57	1879
Michigan.									
Kalamazoo.....	Kalamazoo ..	2.42	15	1.56	−0.86	4.90	1876	1.10	1879
Thornville	Lapeer	2.07	14	1.14	−0.93	3.38	1890	0.58	1879
Minnesota.									
Minneapolis	Hennepin....	1.20	25	0.86	−0.34	3.01	1886	0.06	1869
Montana.									
Fort Shaw	Lewis&Clarke	0.60	20	0.35	−0.25	2.50	1881	0.00	1869
New Hampshire.									
Hanover	Grafton.....	2.90	46	4.52	+1.62	9.75	1851	0.31	1853
New Jersey.									
Moorestown	Burlington ..	3.45	27	5.07	+1.62	5.82	1882	1.13	1867
South Orange	Essex	4.07	19	10.55	+6.48	10.55	1891	1.17	1876
New York.									
Cooperstown.....	Otsego.....	2.48	37	5.54	+3.06	5.54	1891	0.32	1860
Palermo	Oswego.....	3.18	37	2.44	−0.74	6.50	1874	0.16	1884
North Carolina.									
Lenoir	Caldwell.....	4.38	19	5.60	+1.22	9.60	1878	1.10	1890
Ohio.									
N. Lewisburgh ..	Champaign ..	3.78	19	3.50	−0.28	8.67	1876	0.44	1877
Wauseon	Fulton	2.33	17	2.56	+0.23	4.14	1890	1.29	1879
Oregon.									
Albany	Linn.....	8.80	14	4.65	−4.15	14.45	1867	2.22	1882
Eola	Polk.....	6.12	21	4.99	−1.13	16.68	1888	2.53	1875
Pennsylvania.									
Dyberry	Wayne	3.20	21	5.30	+2.10	5.30	1891	0.70	1872
Grampian Hills ..	Clearfield....	3.76	20	3.62	−0.14	5.47	1888	1.21	1872
Wellsborough ...	Tioga.....	6.43	11	6.53	+0.10	12.17	1886	1.98	1890
South Carolina.									
Statesburgh	Sumter.....	3.54	9	2.90	−0.64	6.04	1885	0.90	1890
Tennessee.									
Austin	Wilson.....	5.55	22	5.93	+0.38	18.11	1882	2.66	1886
Texas.									
New Ulm	Austin	4.30	17	2.26	−2.04	10.56	1882	1.00	1887
Vermont.									
Strafford	Orange	3.50	17	6.10	+2.60	6.10	1891	1.70	1878
Virginia.									
Birdsnest.....	Northampton	3.66	22	6.00	+2.34	6.75	1882	1.00	1876
Washington.									
Fort Townsend ..	Jefferson	2.19	20	2.91	+0.72	4.65	1890	0.66	1859
Wisconsin.									
Madison	Dane	1.93	25	1.19	−0.74	3.65	1874	0.40	1878

* 1865, 1867, and 1872.

EXCESSIVE PRECIPITATION.

Precipitation to equal or exceed 10.00 was reported at 11 stations in Louisiana, at 8 stations in Mississippi, at 4 stations in Texas, at 3 stations in Connecticut, at 2 stations in Washington, and at 1 station in Alabama, Massachusetts, New York, New Jersey, and Oregon; the greatest amount, 15.93, being noted at Neah Bay, Wash.

The heaviest precipitation for January commonly occurs in west Washington and Oregon and north California, where in the last 21 years it has failed to exceed 10.00 in 8 years in Washington, 1875 to 1878, 1881 to 1883, and 1889; in 8 years in Oregon, 1872, 1875, 1877 to 1879, 1882, 1884, and 1885; and in 6 years in California, 1873, 1883 to 1885, 1887, and 1889. Among the heavier January rainfalls reported in that region during the period named are: 30.50, at Neah Bay, Wash., in 1874; 22.16, at Astoria, Oregon, in 1871; and 41.63, at Upper Mattole, Cal., in 1888. For this period precipitation to equal or exceed 10.00 in January has been reported for 7 years in Ga., N. Y., and N. C.; for 6 years in Tenn.; for 5 years in Ala. and La.; for 4 years in Ark., Fla., and Tex.; for 3 years in Ind., Mass., and Miss.; for 2 years in Ill., Ohio, Pa., and Va.; and for 1 year in Conn., Iowa, Kans., Ky., Me., Md., Mo., Nev., N. H., and N. J. In Massachusetts the monthly precipitation exceeded 15.00 in 1874 and 1875; in Georgia in 1882 and 1883; in Illinois in 1876; in Indiana in 1884; in Louisiana in 1886; and in Tennessee in 1882.

Precipitation to equal or exceed 2.50 in 24 hours was reported at 18 stations in La., and on 10 dates, the 1st, 7th to 9th, 20th, 21st, 27th to 29th, and 31st; at 7 stations in Ark., on the 30th and 31st; at 7 stations in Mississippi, and on 5 dates, the 8th, 10th, 21st, 28th, and 29th; at 6 stations in Tenn., on the 30th and 31st; at 5 stations in Tex., and on 5 dates, the 7th, 8th, and 26th to 28th; at 4 stations in N. C., and on 4 dates, the 1st, 10–11th, and 21st; at 3 stations in N. Y., and on 3 dates, the 11–12th and 22d; at 2 stations in Ky., on the 31st; at 2 stations in Mass., and on 3 dates, the 17–18th and 19th; at 1 station in Conn. on the 11–12th; at 1 station in Iowa on the 1st; at 1 station in Me., on the 11–12th; at 1 station in N. J., on the 24–25th; at 1 station in Nebr., on the 27–28th; and at 1 station in N. J., on the 24–25th; at 1 station in Nebr., on the 27–28th; and at 1 station in Wash., on the 19th. Among the heavier rainfalls noted for this period are: 5.89, at Houston, Tex., 7–8th; 5.40, at Cheneyville, La., 29th; 5.00, at Jeanerette and Lake Charles, La., 8th; 4.56, at Covington (1), Ky., 30th–31st; and 4.40, at Kosciusko, Miss., 8th.

In the last 21 years precipitation to equal or exceed 2.50 in 24 hours in January has been reported for 12 years in La. and Tenn.; for 11 years in Ga.; for 10 years in N. C. and Tex.; for 8 years in Fla.; for 7 years in Miss., Oregon, and Va.; for 6 years in Cal. and Mass.; for 5 years in Ala., Ark., Ill., N. Y., Ohio, Pa., and Wash.; for 4 years in Ind. and S. C.; for 3 years in Ky., Mo., and N. J.; for 2 years in Conn., Ind. T., Md., and Mich.; and for 1 year in Del., Iowa, Me., N. H., and Wis. Among the heavier 24-hour rainfalls reported for this period are: 8.40, at Point Pleasant, La., 1st–2d, 1886; 7.00, at Emory Grove, Md., 30th, 1879; 6.45, at Huntsville, Tex., 2d, 1890; 6.38, at Jupiter, Fla., 11–12th, 1889; 6.32, at Lynchburgh, Va., 23d, 1885; 6.03, at Hepzibah, Ga., 19–20th, 1889; 6.00, at Fayette, Miss., 6th, 1883; 5.96, at Upper Mattole, Cal., 29th, 1890; 5.71, at Shreveport, La., 13th, 1885; 5.35, at Monroe, La., 2d, 1886; 5.20, at Fullerton, Ark., 1st, 1890. At Upper Mattole, Cal., 31.68 fell from the 27th to 31st, 1888.

Precipitation to equal or exceed 1.00 in 1 hour was reported at 1 station in Tex., on the 9th; at 1 station in N. C., on the 11th; and at 1 station in Tenn., on the 31st. Remarkably heavy rainfall in 1 hour was not reported for January, 1891, and excessive rainfall for 5 and 10 minute periods is given in the table of "Maximum rainfall in one hour or less."

In the last 21 years precipitation to equal or exceed 1.00 in January has been reported for 3 years in Illinois; and for 1 year in California, Florida, Georgia, and Texas. Among the heavier 1-hour rainfalls reported for this period in January are: 4.36 in 1 hour at Atwood, Ill., 1st, 1890; 1.60 in 1 hour, at Cairo, Ill., 17th, 1876; and 1.03, in 28 minutes, at Titusville, Fla., 4th, 1889.

Heavy rainfall at Saint Christopher's Island, W. I., in January, 1880.

Mr J. F. Flagg, Brooklyn, N. Y., has furnished the following description of an extraordinary rainfall at Saint Christopher's Island, British West Indies, in January, 1880: "There was a light rain the evening of the night the downpour took place, but none of consequence before 10 or 11 p. m., and by 5 a. m. the following morning it was all over. There were no rain gauges, but a tank 30 inches deep with vertical sides, such as are used in sugar making, which was known to have been empty before the storm, was filled and running over. The tank was away from any building and it could have received no water save what fell directly from the clouds. The evidence is positive that 30 inches fell, nearly all of it in about 6 hours, and all in 10 or 11 hours, and a low estimate placed the amount at 36 inches. At another estate on the opposite or northerly side of the island, 4 or 5 miles away, and with a mountain some 3,000 feet high intervening, a similar sugar tank, empty the night before, had 23 inches of rainfall the following morning. The little town of Basse Terre, which is built on a nearly flat plain along the sea shore, with a slight upward slope from the water and also sloping in an easterly direction along the shore, with no hill or valley on either side within one-half or

three-fourths of a mile, was covered with a torrent of water 8 feet deep, in places. Several small houses were carred out to sea, larger houses were swept from their foundations, and more than 200 persons were drowned."

Table of excessive precipitation, January, 1891.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Mountain Home	10.06	.....	.....	.....	.....	.....
Alaska.						
Juneau	20.51	2.50	8	.....	.....	.....
Arkansas.						
Brinkley	.....	2.80	30, 31	.....	.....	.....
Forrest City	.....	2.80	30, 31	.....	.....	.....
Fulton	.....	3.97	31	.....	.....	.....
Helena (1)	.....	2.50	31	.....	.....	.....
Helena (2)	.....	3.65	31	.....	.....	.....
Little Rock	.....	3.57	30, 31	.....	.....	.....
Lonoke	.....	2.62	30, 31	.....	.....	.....
Osceola	.....	3.42	30, 31	.....	.....	.....
Connecticut.						
Birmingham	10.16	.....	.....	.....	.....	.....
Southington	10.81	2.90	11?12	.....	.....	.....
Waterbury	10.06	.....	.....	.....	.....	.....
Iowa.						
Clinton	.....	3.03	1	.....	.....	.....
Kentucky.						
Bowling Green	.....	3.50	31	.....	.....	.....
Canton	.....	3.50	31	.....	.....	.....
Louisiana.						
Abbeville	11.45	4.40	8	.....	.....	.....
Alexandria	10.03	.....	.....	.....	.....	.....
Amité City	.....	3.15	8	.....	.....	.....
Baton Rouge	.....	3.12	8	.....	.....	.....
Cheneyville	13.60	2.50	8	.....	.....	.....
Do	.....	5.40	29	.....	.....	.....
Clinton	10.57	2.80	8	.....	.....	.....
Coushatta (1)	.....	3.00	8	.....	.....	.....
Crowley	12.18	3.56	1	.....	.....	.....
Grand Coteau	10.43	3.80	7, 8	.....	.....	.....
Do	.....	2.76	20, 21	.....	.....	.....
Do	.....	2.60	27, 28	.....	.....	.....
Houma	.....	3.01	27, 28	.....	.....	.....
Jeanerette	.....	5.00	8	.....	.....	.....
Lake Charles	13.20	5.00	8	.....	.....	.....
Do	.....	3.80	27	.....	.....	.....
Marksville	11.34	3.78	28, 29	.....	.....	.....
Melville	12.36	.....	.....	.....	.....	.....
New Iberia	.....	4.05	8	.....	.....	.....
North Louisiana Experiment Station	.....	3.12	8	.....	.....	.....
Paincourtville	.....	3.07	7, 8	.....	.....	.....
Plaquemine	11.73	4.65	8, 9	.....	.....	.....
Shell Beach	11.02	3.50	7	.....	.....	.....
Do	.....	3.25	27	.....	.....	.....
Winnsborough	.....	2.50	31	.....	.....	.....
Maine.						
Farmington	.....	2.51	11, 12	.....	.....	.....
Massachusetts.						
Long Plain	10.08	.....	.....	.....	.....	.....
New Bedford (1)	.....	3.40	17, 18	.....	.....	.....
Plymouth	.....	2.95	19	.....	.....	.....
Mississippi.						
Bay Saint Louis	10.11	2.60	8	.....	.....	.....
Brookhaven	10.16	2.79	28, 29	.....	.....	.....
Canton	10.06	.....	.....	.....	.....	.....
Edwards	10.38	.....	.....	.....	.....	.....
Enterprise	.....	2.63	28	.....	.....	.....
Fayette	12.55	2.92	28, 29	.....	.....	.....
Kosciusko	11.00	4.40	8	.....	.....	.....
Do	.....	3.10	10	.....	.....	.....
Moss Point	.....	2.85	8	.....	.....	.....
Summit	11.66	2.56	21	.....	.....	.....
Washington	10.64	.....	.....	.....	.....	.....
Nebraska.						
Fort Sydney*	.....	3.75†	27, 28	.....	.....	.....
New Jersey.						
South Orange	10.53	3.10	24, 25	.....	.....	.....
New York.						
Boyd's Corners	.....	2.61	23	.....	.....	.....
Minnewaska	.....	2.70	11, 12	.....	.....	.....
Pawling	.....	2.56	22	.....	.....	.....
Rondout	11.38	.....	.....	.....	.....	.....
North Carolina.						
Hatteras	.....	2.89	10, 11	.....	.....	.....
Highlands	.....	2.70	1	.....	.....	.....
Soapstone Mount	.....	2.50	21	.....	.....	.....
Wilmington	.....	3.22	10, 11	1.05	1 00	11
Oregon.						
Gardiner	10.84	.....	.....	.....	.....	.....
Tennessee.						
Clarksville	.....	3.68	31	.....	.....	.....
Covington (1)	.....	4.56	30, 31	.....	.....	.....
Franklin	.....	.....	.....	1.25	1 00	31
Johnsonville	.....	2.30	31	.....	.....	.....
Memphis	.....	3.96	30, 31	.....	.....	.....
Trenton	.....	4.17	30, 31	.....	.....	.....
Union City	.....	3.50	31	.....	.....	.....
Texas.						
Brazoria	10.88	2.50	28	.....	.....	.....
Corsicana (1)	.....	3.62	7, 8	.....	.....	.....
Houston	13.11	5.89	7, 8	.....	.....	.....
Do	.....	2.86	26, 27	.....	.....	.....

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Texas—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Huntsville	10.06	3.50	8	.....	.....	.....
Palestine	11.11	4.84	7	.....	.....	.....
Rio Grande	.....	.....	.....	1.00	0 50	9
Washington.						
Neah Bay	15.93	3.10	19	.....	.....	.....
Tatoosh Island	11.91	.....	.....	.....	.....	.....

Received too late to be used in general discussion for January, 1891.

New York.						
West Point	.....	3.00	11–12	.....	.....	.....

Received too late for publication in December, 1890.

California.						
Upper Mattole	.....	3.44	3	.....	.....	.....

*All snow, and probably too great owing to drifts.

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during January, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Signal Service furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Bismarck, N. Dak‡	.....	-	.....		.....	.....
Boston, Mass	0.05	22	0.08	22	0.26	22
Buffalo, N. Y	0.02	29	0.04	29	0.10	29
Cincinnati, Ohio	0.03	31	0.05	31	0.20	31
Chicago, Ill	0.05	1	0.06	1	0.25	1
Cleveland, Ohio	0.01	2	0.02	2	0.10	2
Denver, Colo‡	.....	.....	.....	.....	.....	.....
Detroit, Mich	0.01	1	0.02	1	0.08	1
Dodge City, Kans‡	.....	.....	.....	.....	.....	.....
Duluth, Minn‡	.....	.....	.....	.....	.....	.....
Eastport, Me	0.02	12	0.03	12	0.17	12
Galveston, Tex	0.18	14	0.35	14	0.77	14
Jupiter, Fla	0.15	11	0.20	11	0.70	11
Key West, Fla	0.25	22	0.33	22	0.75	22
Marquette, Mich‡	.....	.....	.....	.....	.....	.....
Memphis, Tenn†	.....	.....	.....	.....	.....	.....
New York City	0.06	2	0.11	2	0.23	22
New Orleans, La	0.10	27	0.15	27	0.45	27
Norfolk, Va	0.12	22	0.15	22	0.45	22
Philadelphia, Pa	0.02	24	0.04	24	0.16	24
Philadelphia Water Works	0.03	2	0.06	2	0.30	2
Portland, Oregon	0.03	3	0.05	3	0.25	3
Saint Louis, Mo	0.17	1	0.21	1	0.46	1
Saint Paul, Minn‡	.....	.....	.....	.....	.....	.....
San Diego, Cal	0.05	28	0.10	28	0.30	28
San Francisco, Cal	0.08	4	0.10	4	0.26	4
Savannah, Ga	0.05	11	0.07	11	0.20	11
Washington City	0.10	22	0.15	22	0.35	22
Wilmington, N. C	0.15	11	0.30	11	1.05	11

*Not sufficient to register. †Rain-gauge not working. ‡Less than .05 in 1 hour. §No record on account of snow.

SNOW (in inches and tenths).

Chart V shows the depth of snowfall reported for the month. Snowfall to exceed 50.0 was reported at Cumbres and Fort Lewis, Colo., and Alta, Utah; to exceed 40.0 at Calais, Me., Somerset, Pa., and Marquette, Mich.; to exceed 30.0 at Strafford, Vt., in central Vt., south-central Pa., at mountain stations in Colo., and at Nogal, N. Mex.; to exceed 20.0 over the greater part of Me. and N. H., south and north Vt., at several stations in Mass., west Conn., central and east N. Y., north-central Va., northeast Pa., upper and north lower Mich., at Springvale, Kans., Embarrass, Wis., northwest N. Mex., west-central Idaho, and at Cisco, Cal.; and to exceed 10.0 in New England, save on the south coast, in N. Y., a greater part of Pa., and thence southward to north-central Va., in west N. C., south-central Tenn., over the east part of the middle plateau, and north N. Mex., thence eastward over south Mo., and northeastward over the north part of the upper lake region,

from east-central Oregon over north Idaho, in the Chiri Cahua Mountains, Ariz., and in Nevada, Placer, and Siskiyou counties, Cal. On the immediate Atlantic coast snow fell as far south as south N. J.; in the Atlantic coast states to Atlanta, Ga.; in the east Gulf states to north Ala. and central Miss.; in the west Gulf states to central Tex. in about latitude 30°; in the plateau region to extreme southeast Ariz.; and in the mountain regions of north Cal., Oregon, and Wash.

The first snow of the season was reported as follows: 1st, Fort Simcoe, Wash. 2d, Nashville, Tenn. 5th, East Portland, Oregon; Waterville, Wash. 6th, Chloride, Ariz. 7th, San Carlos, Ariz.; mountains near Roseburgh, Oregon. 8th, Bisbee, Ariz.; Memphis, Tenn.; Fort Hancock, Tex.; Walla Walla, Wash. 9th, Abilene, El Paso, Berlin, Brownwood, Epworth, Childress, Fort Bliss, Graham, Longview, and Wichita Falls, Tex. 10th, Brady, Burnet, Durham, Grapevine, Mountain Spring, and Weatherford, Tex. 12th, University, Miss.; Austin, Tex. 13th, Valley Head, Ala. 15th, Double Springs and Tuscumbia, Ala. 16th, Temple, Tex. 19th, Fort Davis, Tex. 23d, Farmerville, La.; Brenham, Duval, La Grange, Menardville, and Round Rock, Tex. 24th, Agricultural College, Louisville, Palo Alto, and Water Valley, Miss.

On the 1st a heavy snow storm and high wind prevailed over north Missouri and Kansas, and railroad traffic was interrupted by drifted snow. At Horton, Kans., the snow drifted 4.0 to 7.0 deep in places. At Leavenworth, Kans., but few railroad trains reached the city, and telephone wires were damaged to the extent of about $150. At Topeka, Kans., no trains arrived from the west. On the 7th a snow storm prevailed over east Colorado, north New Mexico, west Nebraska, and Kansas, and extended over Missouri and Illinois on the 8th. On the 9th and 10th a snow storm prevailed over west Texas and Indian Territory. On the 11th and 12th a heavy snow storm was reported in Quebec. On the 24th one of the heaviest snow storms in years prevailed in Tennessee, and at stations in the middle part of the state a depth of 12.0 was estimated. A notable feature of this storm at Nashville, Tenn., was the size of the snowflakes, many of which were as large as a silver dollar and some nearly as large as a saucer. On the 24th and 25th a snow storm extended over the middle Atlantic states and New England, causing great damage to electric wires. On the 27th and 28th a heavy snow storm prevailed in the middle Missouri valley.

The following is a record of the heaviest snowfall reported for January in the several states and territories from 1882 to 1891, inclusive: 1882, District of Columbia, 11.5, in West Washington; New Hampshire, 41.5, at Mount Washington. 1884, Delaware, 14, at Saint George's; Montana, 35.4, at Helena; New Jersey, 26.2, at Little Egg Harbor; New York, 60, at Oswego; North Carolina, 10, at Ogreeta; Ohio, 29, at Jacksonborough; Tennessee, 22.5, near Smithville; Virginia, 35, at Lynchburgh; West Virginia, 27, at Wellsburg. 1885, Indiana, 32.5, at La Grange; Kansas, 17.8, at Fort Scott. 1886, Colorado, 26.5, at Pike's Peak; Illinois, 40.5, at Rockford; Iowa, 37, at Des Moines; Kentucky, 18.5, at Penrod; Maryland, 16.5, at Fallston; Minnesota, 56, at Winona; Missouri, 18, at Pierce City; North Dakota, 29.5, at Richardton; Rhode Island, 21.4, at Pawtucket; Wisconsin, 51.2, at Milwaukee. 1887, Massachusetts, 40, at Fall River; South Dakota, 35.8, at Deadwood. 1888, Arizona, 13, at Prescott; Arkansas, 11.1, at Little Rock; Connecticut, 25.8, at New Hartford; Louisiana, 7 to 8, at Coushatta; Maine, 59.4, at Lewiston; Michigan, 67.4, at Bear Lake; Pennsylvania, 41.3, at Eagle's Mere; Vermont, 53.6, at Northfield. 1889, Alabama, 2, at Bermuda; Georgia, 1, at Duck; Indian Territory, 4.5, at Fort Gibson; Mississippi, 0.2, at Pontotoc and Palo Alto; Nebraska, 45, at Burner's Ranch; South Carolina, trace, at several stations; Texas, 8, at Decatur. 1890, California, 229, at Cisco; Idaho, 73, at Era; Nevada, 111, at Ruby Hill; New Mexico, 14.5, at Fort Wingate; Oregon, 68.6, at Veronia; Utah, 38, at Corinne; Washington, 39, at Fort Spokane; Wyoming, 52.5, at Camp Sheridan.

Snowfall of 10.0, or more, was reported as follows, and in states and territories where the maximum depth was below that amount the station reporting the greatest is given: *Alabama.*—Double Springs, 1.1. *Arizona.*—Chiri Cahua Mountains, 15; Show Low, 11. *Arkansas*—Lead Hill, 13.8. *California*—Cisco, 22; Emigrant Gap, 17; Summit, 15; Boca, 12.5; Truckee, 12.2. *Colorado.*—Cumbres, 57; Fort Lewis, 51; Palmer Lake and Stamford, 37; San Luis, 36.5; Climax, 36; Smoky Hill Mine, 34; Saint Cloud, 32; Watervale, 28; Eagle Farm, 26; Livermore, 25.5; Box Elder, 25; Alvord, 25.3; Moraine, 23.8; Greenhorn, 23.4; Rico, 22.8; Breckenridge and T. S. Ranch, 22; La Porte, 21.9; Fort Collins, 21.7; Elkhorn, 21.5; Castle Rock, 20; Pueblo, 18.5; Chromo, 18.4; Apishapa, Laird, and Wray, 18; Cañon City, 17.5; Stunner, 17.3; Husted, 17.2; Denver and Le Roy, 17; Idaho Springs, 16; Abbott, 15.6; Yuma, 15.5; Bennet and Kirk, 15; Beaver Creek, 14.6; Fort Logan, 14.2; Amherst and Burlington, 14; Pagosa Springs and Rocky Ford, 13; Hugo, 12.5; Brush, Byers, Monte Vista, and Sedgwick, 11; Magnolia, 10.8; Como (near), 10.5; Red Cliff, 10.2; Deer Trail, Sanborn, and Watkins, 10. *Connecticut.*—New Hartford (1), 24.9; Falls Village, 21; Southington and Waterbury, 19; Canton and New Hartford (2), 18; West Simsbury, 16; Hartford (1), 13.8; Hartford (2), 13; Middletown, 12; Mansfield, 11; Birmingham, 10. *Delaware.*—Dover, 2; *District of Columbia.*—Washington City, 6.1. *Georgia.*—Atlanta, 0.5. *Idaho.*—Ruthburg, 20.1; American Falls, 18; Mullan, 16. *Illinois.*—Jordans Grove, 10.2; Mascoutah, 10. *Indiana.*—De Gonia Springs, 5.2. *Indian Territory.*—Fort Supply, 18.7. *Iowa.*—Concord, 17; Sioux City, 16.4; Osage and Storm Lake, 16; West Bend, 15.5; Alta (1 and 2), 14; Manson, 13; Larrabee, 12.5; Bancroft and Cresco, 11; *Kansas.*—Springvale, 25; Havensville, 20.5; McAllaster, 17; Hutchinson, 15.7; Wakefield, 15; Fremont and Yates Centre, 14.5; Kingman, 14; Spearville, 13.2; Allison, Gove City, Manhattan (3), and Sharon Springs, 13; Grainfield, 12.8; Halstead and Norton, 12.5; Bucklin, Cunningham, and Wa Keeney, 12; Salina, Shields, and Tribune, 11; Buffalo Park, 10.8; Downs, Grinnell, Horton, La Harpe, and Marmaton, 10.5; Manhattan (2) and Plainville, 10. *Kentucky.*—Harrodsburgh, 4.8. *Maine.*—Calais, 40; Orono, 33; Lewiston, 28; Kent's Hill, 25; Portland and Belfast, 24; Bar Harbor, 23; Eastport, 20.4; Cornish, 19.5; Farmington, 16; Fairfield, 14; Fort Preble, 13.

Maryland.—Mount Saint Mary's, 12. *Massachusetts.*—Worcester (1), 28.1; Fitchburgh (1), Mount Nonotuck, and Springfield Armory, 24; North Billerica, 23.5; Groton (1), 23; Fitchburgh (2), 22; Ludlow (2), 21; Gilbertville and Lawrence, 20; Westborough, 19.8; Amherst Experimental Station (1), Ludlow (1), and Newburyport (1), 19; Amherst, 18.5; Amherst Experimental Station (2), 18; Leominster, 17; Kendall Green and Salem (2), 16; Blue Hill and Milton, 15; Boston, 14.8; South Hingham, 14; Andover and Randolph, 13; Wakefield, 12; Chesnut Hill, 11; Fall River, 10.5; Mansfield and Taunton (2), 10. *Michigan.*—Marquette, 42.4; Harbor Springs, 38.5; Roscommon, 34.4; Calumet, 33; Atlantic, 32; Gulliver Lake, 31.1; Rockland, 27.2; Caldwell and Manton, 27; Ivan, 26; Saint Ignace, 24.5; Bear Lake, 23.3; Charlevoix, 23.2; Alpena, 23.1; Cheboygan, 22.5; Northport, 21.5; Lathrop, 20.5; Sault de Ste. Marie, 19.3; Hillman, 18; Fort Mackinac, 17.2; Weldon Creek, 17; Fort Brady, 16; Gayling, 15.6; Hillsdale, 13.4; West Branch, 12; Harrisville, 11.1; Crystal Falls, 10.5. *Minnesota.*—Saint Charles, 18.5; Faribault, 18; Grand Meadow, 17; Rolling Green, 16.9; Red Wing, 16.5; Alma City, 15.4; Mankato, 13.9; Sheldon, 12.7; Farmington, 10.3. *Mississippi.*—Holly Springs (1) and Water Valley, 1.5. *Missouri.*—Centreville, 17; Oregon, 13.6; Fortescue, 12; Platte River, 11.8; Springfield, Gordonville, and Lebanon, 11. *Montana.*—Virginia City, 9. *Nebraska.*—Fort Sidney, 56.2?; West Point, 25; David City and Kimball, 21; Genoa, 20.4; Palmer, 20; West Hill, 19.5; Ravenna, 19; Gering, Grand Island, and Imperial, 18; Alliance, 16.5; Hay Springs, 15.7; York, 15.5; Marquette (1), 15.1; Grant, 15; Harvard, 12.8; Tekamah, 12; De Soto, 11.8; Minden, 11.2; Fort Robinson and Lexington, 11; Fremont,

10. *Nevada.*—Elko, 6.5. *New Hampshire.*—Manchester, 25.8; Nashua, 25.5; Belmont, 25.1; West Milan, 23; Berlin Mills, Concord, and North Conway, 22; Littleton, 21; Newton and Plymouth, 20; Antrim and Hanover (1), 17; Lake Village, 15.3; Hanover, (2), 15; East Canterbury, 14.6; Stratford, 14; Wolfsborough, 11.1; Walpole, 11. *New Jersey.*—Freehold, 12; South Orange, 10.2. *New Mexico.*—Nogal, 32; Cuba, 30; Chama, 24; Embudo, 18; Fort Marcy, 16.5; Monero, 13.4; Los Lunas, 13; Santa Fé, 12.3; Springer, 11.5; Antelope Springs, 11.3; Gallinas Spring, 11; Bernalillo, 10.

New York.—Brookfield, 36; Utica, 34; Cooperstown, 28.2; Quaker Street, 26.5; Albany, 26; New Lisbon, 25.3; Boyd's Corners and Middleburgh, 25; Rondout, 24; Oxford, 23.4; Wappinger Falls, 23; Deposit, 22.5; Honeymead Brook, 21.9; Schodack Depot, 21; Ampersand and Liberty, 20; Malone, 19.5; Turin, 18.4; Middletown, 17.5; Poughkeepsie and Southeast Reservoir, 16.8; Rochester, 16.1; Watervliet Arsenal, 16; Easton, 15.5; Galway, 15.1; North Hammond, 15; Constableville, 13.9; Lyon Mountain (2), De Kalb Junction, and Ogdensburgh, 13.5: Syracuse, 13; White Plains, 12.8; Binghampton and Newark Valley, 12.5; Number Four, 12.4; Fort Schuyler and Canton, 12.2; New York City, 11.9; Perry City and Plattsburgh Barracks, 11.1; Queensbury, 11; Oswego, 10.6; Humphrey, 10.5. *North Carolina.*—Asheville, 13; Hendersonville, 11. *North Dakota.*—Fort Pembina, 8.8. *Ohio.*—Findlay, 15.3; Greenville, 15; Ashland, 11.5; Oberlin, 11; Cleveland and North Lewisburgh, 10.5. *Oklahoma Territory.*—Okalahoma City, 10. *Oregon.*—Joseph, 13.8; Baker City, 16. *Pennsylvania.*—Somerset, 40.5; Blue Knob, 34; Salem Corners, 30.1; Blooming Grove, 23; Girardville, 22; Honesdale, 20; Eagle's Mere, 19; Dyberry, 17; Huntingdon, 15.2; Charlesville, McConnellsburgh, and Wilkes Barre, 15; State College, 13.8; Catawissa and Le Roy, 13; Wysox, 12.5; Lewisburgh and Lock Haven, 12; Kilmer, 11.9; Meshoppen and South Eaton, 11; Quakertown, 10. *Rhode Island.*—Pawtucket, 13; Lonsdale, 12; Kingston (1), 10.2. *South Carolina.*—Spartanburgh (1), trace. *South Dakota.*—Oelrichs, 13.5. *Tennessee.*—Lewisburgh and Sharps, 12; Franklin, 11. *Texas.*—Childress, 12. *Utah.*—Alta, 58; Nephi and Parowan, 18; Levan, 17.3; Mount Pleasant, 16; Ogden (2), 14.5; Snowville, 13.8; Promontory, 13; Provo City, 10.5. *Vermont.*—Strafford, 31; East Berkshire, 25.9; Chelsea, 24; Burlington, 23; Lunenburgh, 21; Vernon, 20; Brattleborough (1) and Cornwall, 18; Hartland, 15; Jacksonville, 14; Northfield, 12. *Virginia.*—Dale Enterprise, 21.2; Staunton, 20; Bolar and Woodstock, 12.5. *Washington.*—Spokane Falls, 3.4. *West Virginia.*—Ella, 3.2. *Wisconsin.*—Embarrass, 21; Peshtigo, 19.9; Green Bay, 19.7; Greenwood and Medford (2), 18.5; Chippewa Falls and Weston, 17.5; La Crosse, 17.1; Oconto, 17; Amherst and Menomonie, 16; De Pere, Neillsville, and Portage, 15; Butternut, 14.5; Plover, 14; Bayfield, 13; Centralia and Rhinelander, 12; Hayward and Manitowoc, 11.5. *Wyoming.*—Cheyenne, 20; Camp Pilot Butte, 19.4; Fort Washakie, 19.1; Wheatland, 13; Fort D. A. Russell, 12; Fort McKinney, 11.6; Fort Fetterman, 10.

DEPTH OF SNOW ON GROUND AT CLOSE OF MONTH.

Chart IV shows the depth of snow reported on the ground at the close of the month. The greatest depth of snow, 60.0, was reported at Cumbres, Colo.; it exceeded 30.0 in north and south Vt., central N. Y., south-central Pa., and central Colo.; 20.0 in parts of N. H., Vt., northeast N. Y., at elevated stations in Pa., and in north upper Mich.; and exceeded 10.0 over a greater part of New England, N. Y., north Pa., from upper Mich. southeastward to east-central Nebr., in west Nebr., in south Colo. and the adjoining part of N. Mex., in central Utah, and west-central Idaho. Trace of snowfall was reported in north Va., extreme northwest S. C., east-central Ill., central Mo., in the plateau region to south-central Ariz., in central Nev., extreme north-central Cal., and northeast Oregon.

HAIL.

Hail was reported as follows: 1st, Ark. 5th, Cal. 6th, Cal., Wash. 7th, Tex. 8th, Ala., Miss., Tenn. 9th, Ky., N. C., Tenn. 11th, Tenn. 13th, Tenn. 15th, Miss. 17th, N. C., Pa. 23d, Tex. 24th, Fla., Ga., La., Nev., N. C. 26th, Wash. 27th, R. I. 28th, Ky., Tex. 29th, Ind., La., Miss., N. Y., Ohio, Pa. 30th, Oregon, Tex., Wash. 31st, Md., Miss., N. J., Pa., Tenn.

SLEET.

Description of the more severe sleet storms of the month is given under "Local storms." Sleet was reported as follows: 1st, Ind., Iowa, Kans., Mass., Mich., N. J., N. Y., Pa., Wis. 2d, Mass., N. Y., Ohio, Pa. 3d, Mass. 5th, Mo. 6th, Cal., Kans., Nev., Okla. T. 7th, Miss., Mo., Ohio, S. Dak. 8th, Ariz., Ga., Miss., S. C., Tenn. 9th, Ill., Ind., Ky., Miss., N. C., Ohio, S. C., Tenn. 10th, Ala., Ky., Miss. 11th, Ala., Ill., Me., Mass., N. J., N. Y., Ohio, Tenn. 12th, N. Y., Ohio. 13th, Ariz., Tenn. 14th, Ark., La., Mich., Tex. 15th, La., Miss., Tex., Wash. 16th, Ala., Wis. 17th, Conn., Me., Mass., Mich., N. J., N. Y., Ohio, Pa. 18th, Me., Mass., N. J., Va. 19th, Minn., N. Mex. 20th, Iowa, N. J., N. Mex. 21st, Ind., Iowa, Ohio, Tenn., Wis. 22d, Ill., Iowa, Ohio, S. Dak., Tenn. 23d, Ind. T., Iowa, Kans. 24th, Md., Miss., N. C., S. C., S. Dak. 25th, Idaho, Md., Mass., N. J., Wis. 26th, Nebr., S. Dak. 27th, Iowa, Kans. 28th, Ill., Iowa, Kans., Nebr., N. Y., Ohio, Wis. 29th, Ariz., Idaho, Ind., Me., Mich., N. Y., Ohio, Okla. T., Tex., Wis. 30th, Ariz., Ark., Mich., Nebr., Okla. T. 31st, Iowa, Md., Mass., Mich., Miss., N. J., N. Y., Ohio, Utah, Wash.

WINDS.

The prevailing winds during January, 1891, are shown on Chart II by arrows flying with the wind. In New England, the middle Atlantic and east Gulf states, the extreme northwest, the Missouri Valley, the southern plateau, and on the south Pacific coast the winds were generally from west to north; in the south Atlantic states, the lower lake region, the upper Mississippi valley, and on the northeast and middle-eastern slopes of the Rocky Mountains, from southwest to northwest; over the Florida Peninsula, from the northwest, except at Key West, northeast; in the west Gulf states and over the middle plateau, from northwest to northeast; in the Rio Grande Valley, from north to northeast; in the Ohio Valley, from south to west; on the southeast slope of the Rocky Mountains and on the middle Pacific coast, from northwest to north; over the northern plateau, from south to southwest; on the middle Pacific coast, from east to south; and in Tennessee and the upper lake region, variable.

HIGH WINDS (in miles per hour).

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Signal Service, as follows: 1st, 51, nw., at Chicago, Ill.; 60, sw., at Lexington, Ky.; 50, n., at Milwaukee, Wis. 2d, 64, se., at Fort Canby, Wash.; 54, ne,, at Chicago, Ill. 4th, 54, e., at Fort Canby, Wash. 5th, 60, e., at Fort Canby, Wash. 12th, 58, sw., at Block Island, R. I.; 72, w., at Wood's Holl, Mass. 13th, 59, sw., at Buffalo, N. Y.; 50, w., at Red Wing, Minn. 15th, 70, se., at Fort Canby, Wash. 16th, 60, se., at Fort Canby, Wash. 17th, 57, s., at Fort Canby, Wash. 21st, 50, sw., at Pensacola, Fla. 22d, 60, sw., at Wood's Holl, Mass.; 50, se., at Portland, Me.; 54, se., at New London, Conn.; 54, sw., at Southport, N. C. 25th, 54, nw., at Wood's Holl, Mass.; 50, n., at Nantucket, Mass.; 72, ne., at Block Island, R. I.; 54, nw., at Atlantic City, N. J.; 52, w., at Hatteras, N. C. 29th, 52, w., at Chicago, Ill. 30th, 52, nw., at Wood's Holl, Mass.

LOCAL STORMS.

December **31st.**—A gale from the nw. demolished buildings at Wichita Falls, Tex. **1st.**—2 a. m., a severe storm moved northeast over Keatchie, La., destroying property to the value of about $10,000. At Beatrice, Nebr., a wind storm caused damage to frail buildings, etc. At Little Rock, Ark., a severe thunder-storm occurred about 2 a. m., with heavy rain and high wind. The wind reached a velocity of 34 miles per hour from the sw., and trees and fences were blown down. At Milwaukee, Wis., the heaviest storm of the season prevailed. Rain changed to sleet and sleet to snow which continued until after midnight. The wind reached a velocity of 50 miles per hour at 8.10 a. m., and an extreme velocity of 90 miles at 8.07 p. m. from the n. and ne. The water-works crib was injured, and 90 feet of the breakwater were destroyed. A heavy wind and snow storm prevailed at Green Bay, Wis. At Leavenworth, Kans., rain changed to sleet, and sleet to snow, and high n. to nw. winds prevailed. Considerable damage was caused to electric wires, and railroad traffic was interrupted. At Topeka, Kans., a heavy storm of wind, and rain changing into snow, followed a thunder-storm which occurred December 31st. The snow drifted heavily, interrupting railroad and street traffic.

The night of the 1st–2d a heavy nw. to ne. gale prevailed at Chicago, Ill., the wind reaching a velocity of 54 miles per hour from the ne. the morning of the 2d. **2d.**—A barn was struck by lightning and telegraph wires were damaged at Athol, Mass., in the afternoon. **7th.**—Between 3 and 4 p. m. a tornado moving in a southerly direction passed near Shiner and Yoakum, Tex., in a path about 100 yards in width. It appeared as a black, funnel-shaped cloud and was attended by a roaring noise. One person was killed near Shiner, 4 others were seriously injured, and several houses were reported destroyed. At Palestine, Tex., heavy rain caused damage to railroads. At New York City light rain, freezing as it fell, prevailed. Many electric wires were broken under the weight of ice. **8th.**—High wind prevailed over the west Gulf and some damage was caused to vessels and cargoes of cotton at Galveston, Tex. **9th.**—High wind and rain continued at Pensacola, Fla. Maximum velocity 42 miles per hour from the se. at 5.30 a. m. Considerable timber was lost in the bay, and a fishing smack was driven ashore and wrecked. **11th.**—A sw. gale and rain prevailed at Baltimore, Md. In the lower anchorage vessels dragged their anchors, and 2 vessels were reported aground. A large quantity of drift ice was brought up to the city by the wind and high tide. A heavy gale prevailed off Cape Hatteras, and great damage was caused to property along the middle Atlantic and south New England coasts by high wind and heavy rain. The rainfall was especially heavy in central and east Pennsylvania, where streams flooded their banks and submerged low lands.

12th.—Heavy rain and high wind in conjunction with exceptionally high tides caused great damage along the New Jersey and New England coasts. Ice gorges formed in many streams, causing the overflow of low lands. On the Nova Scotia and east Maine coasts the tide was reported the highest ever known. At Eastport, Me., the wind reached a velocity of 42 miles per hour from the se. at 8.20 p. m., and the barometer, which fell to 28.91, was lower than for several years. The tide was the highest on record, exceeding the high tide of 1869 by 5 inches. Much damage was caused to wharves and to buildings along the water front. At New Brunswick, N. J., all factories were compelled to suspend work on account of an overflow from the Raritan River due to an ice gorge ½ mile below the city. **17th.**—A severe wind, rain, and sleet storm prevailed along the Hudson River and extended over New England on the 18th. The rain froze as it fell, causing great damage to electric wires and trees. **22d.**—A heavy storm of wind and rain prevailed over the Atlantic coast states from North Carolina to Massachusetts. At Wilmington, N. C., the wind reached a velocity of 43 miles per hour from the sw. at 8.40 a. m., without causing serious damage. At Hatteras, N. C., a s. gale prevailed during the morning. Two schooners were wrecked on the North Carolina coast. A heavy rain storm swept over the Wyoming Valley, Pa., doing extensive damage in low-lying districts, and submerging a part of Wilkes Barre. Great damage was caused by heavy rain and freshets in streams in New Jersey. A severe wind and rain storm prevailed over east New York and Connecticut, causing much damage by the overflow of streams. At Birmingham, Conn., the dam used to divert the water of the Housatonic River into an artificial channel for the use of factories gave way and was damaged to the extent of about $200,000. At Southington, Conn., factories were closed and railroads submerged. The storm was also very destructive along the Massachusetts coast.

25th.—A severe storm of wind, rain, sleet, and snow prevailed in the middle Atlantic states and New England, causing an almost entire suspension of telegraphic communication. Referring to a reported fall of fish at Nashville, Tenn., during a storm of the 26th, the observer at that place states that on the morning of that date a fire occurred, and, as the pumps of the water works were out of order, the water in the reservoir was low. Small fish in the bottom of the reservoir were brought through the pipes to the city. The firemen observing them passing through the hose while washing their engine threw a stream into the air and the fish were scattered about the street. Persons seeing them concluded that they had descended with the snow which was falling at the time. **29th.**—Thunder-storms were reported in Ohio, Pennsylvania, and New York. A thunder-storm, with violent wind and hail, moved northeast over Wellsborough, Pa., between 10.30 and 11.15 a. m. **31st.**—At 3 p. m. a tornado passed northeast over Palo Alto, Miss. The cloud which was black and funnel-shaped was attended by a roaring sound and heavy rain and hail. One person was fatally and several seriously injured; and a number of buildings and a quantity of timber were levelled to the ground. The total damage to buildings in the county was estimated at $10,000. **30th–31st.**—Heavy rain fell during the night at Memphis, Tenn., flooding streets and sewers. Thunder was heard the afternoon of the 31st.

INLAND NAVIGATION.

ICE IN RIVERS AND HARBORS.

Lake Huron.—On the 7th the lake was frozen at Port Huron, Mich. The night of the 21st an ice gorge formed at the foot of Lake Huron, and the water in the Saint Clair and Black rivers fell one foot.

Green Bay.—On the 5th the bay was frozen at Green Bay, Wis. A report from Sturgeon Bay of this date stated that the bay was free from ice at that point.

Lake Champlain was reported closed at Burlington, Vt., on the 27th.

Hudson River.—On the 3d and 5th heavy drift ice impeded navigation in the Hudson and East rivers at New York City.

Delaware River.—Navigation was resumed at Beverly, N. J., on the 19th. At Philadelphia, Pa., the Delaware and Schuylkill rivers were free from ice after the 15th.

Lake Erie.—On the 27th drift ice was noted in the Niagara River at Buffalo, N. Y., and on the 30th there was floating ice in the river and harbor.

Ohio River.—Large cakes of floating ice interfered with navigation at Parkersburgh, W. Va., on the 3d, and drift ice

was reported on the 5th, 7th, and 8th. At Marietta, Ohio, floating ice was reported on the 4th, 8th, 9th, 11th, and 20th.

Detroit River.—Floating ice at Detroit, Mich., on the 2d, 5th to 7th, 9th, 12th, 13th, 15th to 18th, and 25th to 27th.

Saint Clair River.—On the 4th the river was full of floating ice at Port Huron, Mich. On the 10th the river was closed by an ice jam 12 miles south of Port Huron. A steamer plying between Port Huron and Marine City was obliged to lay up after having made daily trips for 22 months.

Mississippi River.—Floating ice at Davenport, Iowa, 2d to 7th, 12th to 14th, 24th, and 25th. Floating ice at Alton, Ill., 9th to 15th; ice disappeared 16th.

Missouri River.—At Fort Sully, S. Dak., the river was frozen during the month. At Sioux City, Iowa, the river was frozen on the 4th. Floating ice at Leavenworth, Kans., 1st to 10th, and 21st to 29th. Floating ice at Saint Joseph, Mo., 2d, 3d, 5th, 6th, 11th to 13th, 16th, 21st, 22d, 24th, and 26th to 31st. Floating ice at Hermann, Mo., 14th and 15th.

FLOODS.

At Pittsburgh, Pa., the Monongahela River rose rapidly from the 1st to 3d, reaching 23.2 feet, 1.2 feet above the danger-line on the gauge, about 6 a. m., 3d, after which it fell slowly. The tracks of the Pittsburgh and Western Railroad and a part of the 1st ward in Allegheny City were under water. On the 2d the Ohio River was rising rapidly at Cincinnati, Ohio, and the river was full of drift. The river continued to rise until the 6th, when it reached 48.7 feet, at which point it remained several hours and then began to recede. Basements of buildings at the corner of River and Maine streets were flooded at noon of the 4th, when the river-gauge reading was 45.1 feet. On the 3d, 4th, 5th, 22d, 23d, and 30th the Tennessee River was rising at Chattanooga, Tenn., and considerable drift wood passed down. On the 10th heavy rain and melting snow caused streams to overflow and inundate low lands in Westchester Co., N. Y. On the 11th and 12th floods occurred in west New England, east New York, and east Pennsylvania. Ice gorges and unusually high water caused damaging floods in the Housatonic and Naugatuck valleys, Conn. Near Rondout, N. Y., ice jams flooded streams. At New York City the high wind backed the water into Battery Park, washing away benches and depositing drift wood. Heavy rain and melting snow caused floods in the Schuylkill and Lehigh valleys, Pa. Considerable damage was caused at and near Allentown, Pa. On the 22d floods occurred in west Massachusetts, Connecticut, east New York, and east Pennsylvania, where great destruction to property was caused.

Heights of rivers above low-water mark, January, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La	29.9	31	24.1	1	9.8	14.3
Arkansas River.						
Fort Smith, Ark	22.0	18	11.6	31	5.0	6.6
Little Rock, Ark	23.0	13	15.2	30	9.3	5.9
Missouri River.						
Fort Buford, N. Dak*	.....	.....	.....	.....	.....	.....
Kansas City, Mo	21.0	31	6.4	7,8	2.7	3.9
Mississippi River.						
Saint Paul, Minn*	14.5	.....	.....	.....	.....	.....
La Crosse, Wis*	13.0	.....	.....	.....	.....	.....
Dubuque, Iowa*	16.0	.....	.....	.....	.....	.....
Davenport, Iowa	15.0	4, 14	2.1	22, 23	0.7	1.4
Keokuk, Iowa	14.0	1	1.8	26	— 0.1	1.9
Saint Louis, Mo	32.0	8, 9	5.3	1	2.9	2.4
Cairo, Ill	40.0	12, 13	32.2	26	21.9	10.3
Memphis, Tenn	34.6	15, 16	24.3	1	10.3	14.0
Vicksburg, Miss	41.0	20, 21	33.6	1	11.8	21.8
New Orleans, La	13.0	28	12.0	5	4.2	7.8
Ohio River.						
Pittsburgh, Pa	22.0	3	23.2	10	4.5	18.7
Parkersburgh, W. Va	38.0	4	34.5	11	9.2	25.3
Cincinnati, Ohio	50.0	6	48.7	23	21.0	27.7
Louisville, Ky	25.0	7	22.0	23	9.3	12.7
Cumberland River.						
Nashville, Tenn	40.0	15	25.1	22	11.8	13.3
Tennessee River.						
Chattanooga, Tenn	33.0	5	15.5	10	6.3	9.2
Knoxville, Tenn	.....	4	9.1	31	3.0	6.1
Monongahela River.						
Pittsburgh, Pa	29.0	3	23.2	10	4.5	18.7
Savannah River.						
Augusta, Ga	32.0	13	21.3	3	7.3	14.0
Willamette River.						
Portland, Oregon	15.0	16	3.7	20, 21, 22	1.0	2.7

*Frozen.

MISCELLANEOUS PHENOMENA.

SUN SPOTS.

Haverford College Observatory, Pa. (observed by Prof. F. P. Leavenworth):

Date.	Number of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculæ.	Remarks.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	
Jan., 1891.										
2, 3 p. m.	0	0	0	0	0	0	0	0	1	Definition bad.
3, 10 a. m.	0	0	0	0	0	0	0	0	1	Definition poor.
4, 10 a. m.	0	0	0	0	0	0	0	0	1	Definition poor.
5, 12 m	1	3	0	0	0	0	1	3	3	Definition fair; spots small.
6, 9 a. m.	2	4	0	0	0	0	3	7	2	Definition fair; 1 spot veiled.
7, 9 a. m.	0	0	0	0	0	0	1	5	2	Definition poor.
8, 4 p. m.	1	1	0	0	0	0	2	4	1	Definition poor.
9, 10 a. m.	0	1	0	0	0	0	2	3	1	Definition poor.
12, 10 a. m.	0	0	0	0	0	0	0	0	2	Definition fair.
13, 9 a. m.	0	0	0	0	0	0	0	0	0	Definition good.
14, 10 a. m.	0	0	0	0	0	0	0	0	0	Definition poor.
15, 3 p. m.	1	4	0	0	0	0	1	4	1	Definition fair; 1 spot very large.
18, 10 a. m.	0	5	0	0	0	0	1	9	1	Definition fair; 1 spot very large.
18, 3 p. m.	2	10	0	0	0	0	3	19	1	Definition fair; 1 spot very large.
19, 10 a. m.	0	2	0	0	0	0	3	21	1	Definition fair; 1 spot very large.
21, 10 a. m.	0	0	0	0	0	0	1	1	0	Definition bad; 1 spot very large.
22, 4 p. m.	0	0	0	0	0	0	2	13	0	Definition fair.
23 10 a. m.	0	10	0	0	0	0	2	23	0	Definition fine.
24, 10 a. m.	2	7	0	0	0	0	4	30	2	Definition good.
26, 2 p. m.	0	6	0	0	0	0	4	36	2	Definition fair.
27, 9 a. m.	0	4	0	0	0	0	4	40	3	Definition fair; several large spots.
28, 9 a. m.	0	5	0	0	0	0	4	45	3	Definition fair.
30, 10 a. m.	0	0	1	2	0	0	3	28	1	Definition fair; 1 large spot.

Mr. D. E. Hadden, Alta, Iowa: 4th, small faculæ near ne. and sw. limbs. 6th, faculæ mottling on e. limb. 7th, glimpses of faculæ through clouds. 15th, 1 group, 1 spot; large spot by rotation on se. edge of limb. 16th, 1 group, 4 spots; large spot had finely developed umbra and penumbra, with faculæ surrounding and faculæ on e. limb. 17th, 1 group, 4 spots; appearance unchanged. 18th, 2 groups, 6 spots; large spot unchanged in appearance; small new group in nw.; large area of faculæ on se. limb. 19th, 2 groups, 6 spots. 20th, 2 groups, 4 spots; group nw., vanishing, faculæ surrounding it. 23d, 1 group, 6 or 8 spots; glimpses through clouds; large spot sw.; numerous small spots, could not be seen on account of clouds. 24th, 1 group, spots could not be seen on account of clouds. 25th, 3 groups, 9 spots; large spot in sw. still had well-developed umbra and penumbra; 1 new group 1 day w. of meridian in s. latitude; other group surrounded by faculæ on e. limb with 5 or 6 spots; it appeared by rotation. 26th, 4 groups, 10 spots; new group by rotation on e. limb with faculæ 1 day e. of group number 3. 27th, 3 groups; too hazy to see faculæ or count spots; large spot on w. limb, disappearing by solar rotation, having completed transit in 13 days. 29th, 2 groups, 8 spots; groups in n. latitude; faculæ disappearing on w. limb. 30th, 2 groups, 8 or 10 spots; large group diminishing in size and brilliancy. Cloudy 1st, 9th, 21st, 22d, 28th, 31st.

Mr. John W. James, Riley, Ill.: 1st to 14th, observations on 9 days, none seen. 15th, large spot on east edge. 17th, 2 new small spots southwest of large one. 19th, immense areas of faculæ, and 1 faint spot near east limb. 22d, only

large spot left. 25th, a new group, surrounded by very prominent faculæ 1 day from east edge. 28th, large spot disappeared by solar rotation; it was over 30,000 miles in diameter. 30th, new group on sun's meridian, 1 spot 4 days from east edge.

Mr. H. D. Gowey, North Lewisburgh, Ohio: sun spots were observed on the 15th, 20th, 22d, 24th, 25th, 26th, and 30th.

DROUGHT.

The month was very dry and water scarce at Fayette, Mo. At Farley's Camp, Ariz., the month was reported the driest January since 1879. At Mount Carmel, Utah, and Eola, Oregon, the month was reported very dry. At San Diego and Santa Cruz, Cal., vegetation suffered for want of rain; at San Diego the drought was broken on the 28th.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were reported as follows: 12th, Montevideo, Minn. 16th, Orono, Me.; Wolsey, S. Dak. 18th, Albany, Oregon. 19th, Webster, S. Dak.

THUNDER-STORMS.

Thunder-storms were reported as follows: east of the Rocky Mountains thunder-storms were reported in the greatest number of states, 14, on the 29th; in 12 on the 11th; in 10 on the 31st; in 9 on the 1st and 31st; in 8 on the 27th and 28th; in 4 on the 10th and 12th; in 3 on the 2d; in 2 on the 7th, 21st, 23d, and 24th; and in 1 on the 3d, 5th, 6th, 8th, 9th, 18th, 20th, and 22d. On the 4th, 13th to 17th, 19th, 25th, and 26th, no thunder-storms were reported.

East of the Rocky Mountains thunder-storms were reported on the greatest number of dates, 10, in La.; on 9 in Tex.; on 8 in Miss.; on 6 in Ala. and N. Y.; on 4 in Ohio, S. C., and Tenn.; on 3 in Ark., Fla., Ill., Kans., Mich., Mo., N. C., and Pa.; on 2 in D. C., Ga., Ind., Ky., N. J., Okla. T., and Va.; and on 1 in Conn., Md., N. H., and W. Va. West of the Rocky Mountains thunder-storms were reported as follows: Cal., 5th and 6th; N. Mex., 7th. In states and territories other than those named no thunder-storms were reported.

VERIFICATIONS.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for January, 1891, were made by Major H. H. C. Dunwoody, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by 2d Lieutenant John P. Finley, Signal Corps.

Percentages of forecasts verified, January, 1891.

States.		States.	
Maine	80.6	Kentucky	83.8
New Hampshire	78.2	Ohio	79.7
Vermont	76.7	West Virginia	81.9
Massachusetts	82.3	Indiana	89.5
Rhode Island	82.4	Illinois	86.9
Connecticut	84.2	Lower Michigan	85.0
Eastern New York	81.7	Upper Michigan	77.9
Western New York	83.5	Wisconsin	85.5
Eastern Pennsylvania	87.7	Minnesota	82.2
Western Pennsylvania	77.2	Iowa	90.4
New Jersey	87.0	Kansas	90.3
Delaware	84.3	Nebraska	90.0
Maryland	85.9	Missouri	89.4
District of Columbia	84.9	Colorado	87.7
Virginia	85.2	North Dakota	83.6
North Carolina	86.9	South Dakota	82.5
South Carolina	89.9	Southern California*	96.3
Georgia	90.6	Northern California*	91.2
Eastern Florida	90.6	Oregon*	83.3
Western Florida	89.8	Washington*	81.4
Alabama	88.3	*By elements:* Weather	86.7
Mississippi	89.5	Temperature†	83.0
Louisiana	89.0	Monthly percentage of weather and temperature combined‡	85.2
Texas	82.7		
Arkansas	90.3		
Tennessee	86.3		

*In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. †The forecasts of temperature in districts east of the Rocky Mountains for January, 1891, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. ‡The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

FORECASTS FOR 48 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public the Chief Signal Officer has authorized forecasts for 48 and 72 hours, covering the 2d and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 73; temperature, 43. Percentages of verifications: weather, 56.6; temperature, 90.2; weather and temperature combined, 66.1.

WIND SIGNALS FOR JANUARY, 1891.

Statement showing percentages of justifications of wind signals for the month of January, 1891:

Wind signals.—(Ordered by Major H. H. C. Dunwoody). Total number of signals ordered, 87; justified as to velocity, wholly, 73, partly, 7; justified as to direction, 81. Of the signals ordered 52 were cautionary, of which 41 were wholly and 6 partly justified; and 35 were storm signals, of which 32 were wholly and 1 partly justified. 33 signals were ordered for easterly winds, of which 29 were justified, and 54 were ordered for westerly winds, of which 52 were justified. Percentage of justifications, 81.7.

COLD-WAVE SIGNALS AND TEMPERATURE-FALL WARNINGS.

[Ordered by Assistant Professor T. Russell.]

Number of cold-wave signals ordered, 188; justified, 94. Percentage of justifications, 50.0. Number of temperature-fall warnings, 119. Percentage of justifications, 49.6. Percentage of justifications of cold-wave signals and temperature-fall warnings combined, 49.9.

Percentages of verifications of weather and temperature signals reported by directors of the various State Weather Services for January, 1891.

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Iowa	84	93	New Jersey	82	88
Illinois	78	78	North and South Dakota	75	84
Michigan	82	86	Ohio	83	89
Minnesota	72	86	Pennsylvania	80	86
Nebraska	88	89	South Carolina	92	94

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for January, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—The mean was 2.2 above the normal; maximum, 80, at Citronelle, 30th; minimum, 18, at Jasper, 4th; greatest monthly range, 53, at Citronelle; least monthly range, 38, at Mobile.

Precipitation.—The average was 0.67 above the normal; greatest monthly, 8.11, at Jasper; least monthly, 2.96, at Citronelle.

Wind.—Prevailing direction, northwest.—*Prof. P. H. Mell, Auburn, director; J. M. Quarles, Private, Signal Corps, assistant.*

ARKANSAS.

Temperature.—The mean was 4.7 above the normal; maximum, 71, at Lead Hill, 26th; minimum, 13, at Lead Hill, 13th; greatest monthly range, 58, at Lead Hill; least monthly range, 32, at Brinkley and Forrest City.

Precipitation.—The average was 1.30 above the normal; greatest monthly, 7.68, at Little Rock; least monthly, 1.29, at Fayetteville.

Wind.—Prevailing direction, north.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Sergeant, Signal Corps, assistant.*

COLORADO.

Temperature.—The mean was 3.0 below the normal; maximum, 73, at Bennet, 5th; minimum, —36, at Breckenridge, 12th and 30th; greatest monthly range, 102, at Breckenridge; least monthly range, 40, at First View.

Precipitation.—The average was considerably above the normal; greatest monthly, 5.70, at Cumbres; least monthly, 0.06, near Pagoda.

Wind.—Prevailing direction, west.—*W. S. Miller, Sergeant, Signal Corps, Denver, assistant.*

ILLINOIS.

Temperature.—The mean was 7.5 above the normal of the last 13 years; maximum, 63, at Flora and Greenville, 27th; minimum, —2, at Cockrell, 3d.

Precipitation.—The average was 0.48 below the normal of the last 13 years; greatest monthly, 4.58, at Golconda; least monthly, 0.56, at Pana.

Wind.—Prevailing direction, northwest.—*John Craig, Sergeant, Signal Corps, Springfield, in charge.*

INDIANA.

Temperature.—Maximum, 66, at Huntingburgh, 27th; minimum, 2, at Point Isabel, 1st; greatest monthly range, 50, at Huntingburgh and Princeton; least monthly range, 36, at Shelbyville.

Precipitation.—Greatest monthly, 5.20, at De Gonia Springs; least monthly, 0.85, at Logansport.

Wind.—Prevailing direction, southwest.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.*

IOWA WEATHER AND CROP SERVICE.

This was the warmest January in the last ten years.

Temperature.—The mean was 10 above the normal; maximum, 58, at Sioux City, 19th; minimum, —4, at Manson, 2d and 12th, and at Bancroft, 31st; greatest monthly range, 56, at Bancroft; least monthly range, 32, at Eagle Grove.

Precipitation.—Greatest monthly, 3.99, at McCausland; least monthly, 0.61, at Fort Madison.

Wind.—Prevailing direction, northwest.—*J. R. Sage, Des Moines, director; G. M. Chappel, Sergeant, Signal Corps, assistant.*

KANSAS.

Temperature.—The mean ranged from 5 to 10 above the normal; maximum, 71, at Shields, 13th and 18th; minimum, —3, at Lakin and Spearville, 16th; greatest monthly range, 73, at Shields; least monthly range, 40, at Grainfield.

Precipitation.—The average was above the normal, except in the extreme northwest and southeast; greatest monthly, 4.35, at Kingman; least monthly, 0.30, at Page City.

Wind.—Prevailing direction, northwest.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.*

KENTUCKY.

Temperature.—The mean was about 3.0 above the normal; maximum, 68, at Edmonton, 30th; minimum, 14, at Harrodsburgh, 7th; greatest monthly range, 50, at Edmonton; least monthly range, 38, at Louisville.

Precipitation.—The average was about 1.25 above the normal; greatest monthly, 7.83, at Central City; least monthly, 4.30, at Caddo.

Wind.—Prevailing direction, southwest.—*Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps, assistant.*

LOUISIANA.

Temperature.—The mean was nearly normal; maximum, 81, at Plaquemine, 31st, and at Houma, 29th; minimum, 20, at Plaquemine, 14th, at Lake Charles, 12th, and at Houma, 13th; greatest monthly range, 61, at Houma and Plaquemine; least monthly range, 30, at Winnsborough.

Precipitation.—The average was 2.31 above the normal; greatest monthly, 13.60, at Cheneyville; least monthly, 0.06, at Girard.

Wind.—Prevailing direction, north.—*George E. Hunt, Sergeant, Signal Corps, New Orleans, in charge.*

MICHIGAN.

Temperature.—The mean was 4.4 above the normal of the last 15 years; maximum, 59, at Benton Harbor, 1st; minimum, —20, at Cheboygan, 16th; greatest monthly range, 60, at Cheboygan; least monthly range, 29, at Atlantic.

Precipitation.—The average was 0.34 below the normal of the last 15 years; greatest monthly, 4.76, at Roscommon; least monthly, 0.68, at Chelsea.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Sergeant, Signal Corps, Lansing, director.*

MINNESOTA.

Temperature.—Maximum, 49, at Faribault, 19th and 21st, and at Minneapolis, 20th; minimum, —26, at Pokegama Falls, 16th; greatest monthly range, 68, at Pokegama Falls; least monthly range, 40, at La Crosse, Wis.

Precipitation.—Greatest monthly, 2.50, at Saint Charles; least monthly, 0.06, at Montevideo.

Wind.—Prevailing direction, northwest—*John Healy, Corporal, Signal Corps, Minneapolis, in charge.*

MISSISSIPPI.

Temperature.—The mean was 0.4 above the normal; maximum, 81, at Hattiesburgh, 31st; minimum, 20, at Louisville, 4th and 13th; greatest monthly range, 55, at Louisville, Vaiden, and Enterprise; least monthly range, 32, at Bay Saint Louis.

Precipitation.—The average was 2.26 above the normal; greatest monthly, 12.55, at Fayette; least monthly, 3.79, at Greenville.—*R. B. Fulton, Signal Corps, University, director.*

METEOROLOGICAL REPORT OF THE MISSOURI STATE BOARD OF AGRICULTURE.

Temperature.—The mean was about 8 above the normal; maximum, 74, at Jefferson City, 8th; minimum, —1, at Pickering, 2d; greatest monthly range, 61, at Jefferson City; least monthly range, 29, at Warrenton.

Precipitation.—The average was 1.00 to 2.00 above the normal; greatest monthly, 7.10, at Gordonville; least monthly, 0.10, at New Haven.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Sergeant, Signal Corps, assistant.*

NEBRASKA.

Temperature.—The mean was more than 10 above the normal; zero was not reached in the southeastern part of the state, and —10 was the lowest reached in any part of the state.

Precipitation.—The rainfall was unevenly distributed, ranging from 1.00 to over 2.00.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Sergeant, Signal Corps, assistant.*

NEVADA.

The month has been remarkable for lack of precipitation and extremely mild weather.

Temperature.—The mean was 2.9 above the normal; maximum, 68, at Mill City, 1st; minimum, —25, at Elko, 11th; greatest monthly range, 77, at Elko; least monthly range, 37, at Candelaria and Virginia City.

Precipitation.—The average was 1.34 below the normal; greatest monthly, 0.65, at Ely; least monthly, trace, at Mill City.

Wind.—Prevailing direction, northeast.—*Prof. Charles W. Friend, Carson City, director; D. C. Grunow, Corporal, Signal Corps, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 4.0 above the normal; maximum, 59, at Kingston (*b*), 12th; minimum, —30, at West Milan, 1st; greatest monthly range, 74, at West Milan; least monthly range, 32, at Block Island.

Precipitation.—The average was 2.85 above the normal; greatest monthly, 10.16, at Stevenson; least monthly, 1.60, at Newburyport (*b*).

Wind.—Prevailing direction, northwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Private, Signal Corps, assistant.*

NEW JERSEY.

Temperature.—The mean was 4.7 above the normal; maximum, 59, at Egg Harbor City, 2d; minimum, 10, at Tenafly, 6th, 9th, and 20th; greatest monthly range, 45, at Egg Harbor City; least monthly range, 31, at Ocean City.

Precipitation.—The average was 2.93 above the normal; greatest monthly, 10.55, at South Orange; least monthly, 4.41, at Atlantic City.

Wind.—Prevailing direction, northwest.—*E. W. McGann, Sergeant, Signal Corps, New Brunswick, in charge.*

NEW YORK.

Temperature.—Maximum, 60, at New York City, 2d; minimum, —15, at Queensbury, 10th, and at Canton, 17th; greatest monthly range, 62, at Canton; least monthly range, 35, at Fort Columbus, Willets Point, and Setauket.

Precipitation.—Greatest monthly, 11.38, at Rondout; least monthly, 0.85, at Fleming.

Wind.—Prevailing direction, northwest.—*Prof. E. A. Fuertes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Private, Signal Corps, assistant.*

NORTH CAROLINA.

Temperature.—The mean was 0.5 above the normal; maximum, 75, at Wilmington, 31st; minimum, 7, at Franklin, 7th; greatest monthly range, 56, at Marion; least monthly range, 35, at Hatteras.

Precipitation.—The average was 0.66 below the normal; greatest monthly, 8.98, at Highlands; least monthly, 2.86, at Norfolk, Va.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Sergeant, Signal Corps, assistant.*

NORTH AND SOUTH DAKOTA.

Temperature.—The mean was 12.0 above the normal; maximum, 60, at Millbank, S. Dak., 18th; minimum, —24, at Grafton, N. Dak., 15th; greatest monthly range, 73, at Oelrichs, S. Dak.; least monthly range, 41, at De Smet, S. Dak.

Precipitation.—The average was 0.43 below the normal; greatest monthly, 1.35, at Oelrichs, S. Dak.; least monthly, trace, at Howard, S. Dak., and New England City, N. Dak.

Wind.—Prevailing direction, northwest.—*S. W. Glenn, Sergeant, Signal Corps, Huron, S. Dak., in charge.*

OHIO.

Temperature.—The mean was 6.0 above the normal; maximum, 65, at Athens, 31st; minimum, 3, at Wauseon, 8th, and is the highest minimum temperature recorded for January since the opening of the Bureau.

Precipitation.—The average was 0.49 below the normal; greatest monthly, 4.76, at Georgetown; least monthly, 1.00, at Bellevue.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Sergeant, Signal Corps, secretary and assistant.*

OREGON.

The characteristics of the month were the abnormally high temperature and the deficiency in precipitation.

Temperature.—The mean was 6.1 above the normal; maximum, 67, at Ashland, 20th; minimum, —14, at Silver Lake, 9th.

Precipitation.—The average was 2.34 below the normal; greatest monthly, 10.84, at Gardiner; least monthly, 0.16, at Burns.

Wind.—Prevailing direction, south.—*Hon. H. E. Hayes, Master State Grange, Oswego, director; B. S. Pague, Sergeant, Signal Corps, assistant.*

PENNSYLVANIA.

Temperature.—The mean was 4.0 above the normal; maximum, 64, at Uniontown, 29th; minimum, —4, at Eagle's Mere and Lewisburgh, 4th, at Columbus, 8th, and at Wellsborough, 9th.

Precipitation.—The average was nearly normal; greatest monthly, 8.74, at Girardville; least monthly, 1.22, at Greenville.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 75, at Columbia, 31st; minimum, 21, at Cheraw, 8th; greatest monthly range, 54, at Hardeeville; least monthly range, 39, at Port Royal.

Precipitation.—Greatest monthly, 7.12, at Evergreen; least monthly, 1.17, at Hardeeville.

Wind.—Prevailing direction, west.—*A. P. Butler, director, State Weather Service, and observer, Signal Service.*

TENNESSEE.

The month was characterized by rather mild temperature, and an excess of rainfall.

Temperature.—The mean was slightly above the normal; maximum, 73, at Greeneville, Riddleton, and Austin, 31st; minimum, 15, at Rugby, 5th and 6th; greatest monthly range, 54, at Greeneville, Springdale, and Riddleton; least monthly range, 36, at Memphis and Florence Station.

Precipitation.—The average was considerably in excess of the normal for the last eight years; greatest monthly, 7.92, at Lewisburgh; least monthly, 3.50, at Greeneville.

Wind.—Prevailing direction, north and west.—*J. D. Plunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.*

TEXAS.

Temperature.—The mean was 4 to 6 above the normal over the eastern and southern portions, 3 to 5 below over the west and northwest portions, and normal over the central portion; maximum, 88, at Rio Grande City, 30th; minimum, 2, at Coldwater, 15th; greatest monthly range, 57, at Temple and Rio Grande City; least monthly range, 28, at Weatherford.

Precipitation.—The average was 3.00 to 6.00 above the normal over the coast region and the eastern and central portions, and 0.25 to 3.00 above over other portions; greatest monthly, 13.11, at Houston; least monthly, 0.27, at El Paso.—*D. D. Bryan, Galveston, director; I. M. Cline, Sergeant, Signal Corps, assistant.*

WISCONSIN.

Temperature.—The mean was 8.0 above the normal; maximum, 53, at Hayward, 4th; minimum, —16, at Hayward, 16th.

Precipitation.—The average was normal; greatest monthly, 2.80, at Embarrass; least monthly, 0.25, at Mauston.

Wind.—Prevailing direction, northwest.—*R. E. Kerkam, Milwaukee, Sergeant, Signal Corps, in charge.*

Meteorological record of Army post surgeons, voluntary, and other co operating observers, January, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Alabama.	°	°	°	*Ins.*
Bermuda *†	73	21	47.8	1.41
Bessemer	70	24	41.9	7.52
Brewton	75	25	49.1	5.50
Childersburgh †	.....	.....	.....	4.87
Citronelle	80	27	51.0	2.96
Claiborne Landing †	.....	.....	.....	2.00
Columbiana †	72	20	44.0	6.77
Cordova †	.....	.....	.....	4.73
Decatur (1) †	.....	.....	.....	7.02
Double Springs †h	65	22	46.0	6.18
Florence	.....	.....	.....	3.00
Gadsden	.....	.....	.....	6.40
Greensborough	68	26	44.8	6.75
Jasper	70	18	40.8	8.11
Livingston (1) *	72	26	43.8	7.46
Mountain Home	68	20	39.1	10.06
Mt. Vernon B'ks	75	21	46.7	4.25
Selma (1)	.....	.....	.....	1.39
Talladega	.....	.....	.....	5.58
Tuscaloosa	.....	.....	.....	8.48
Tuscumbia (1)	70	24	40.9	5.14
Uniontown	74	24	51.2	6.81
Valley Head †	69	20	38.9	7.34
Alaska.				
Juneau	50	5	35.1	20.51
Killisnoo	52	10	35.9	8.35
Arizona.				
Antelope Valley	.....	.....	.....	0.00
Ariz. Canal Co. Dam.	70	26	48.6	0.01
Ash Canyon	58	19	39.0	0.38
Benson *	66	23	42.8	0.38
Bisbee †*	70	22	40.5	0.55
Buckeye	.....	.....	.....	0.00
Calabasas	.....	.....	.....	0.35
Casa Grande *	87	29	55.9	0.65
Chino	68	16	35.4	0.00
Chiricahua M't'n	.....	.....	.....	1.50
Chloride	62	19	39.8	T.
Cooleys g	48	— 7	26.4	1.58
Cottonwood	.....	.....	.....	2.10
Dragoon †	.....	.....	.....	0.36
Dragoon Summit *	58	32	42.6	0.33
Dos Cabezos †	.....	.....	.....	0.40
Dudleyville	.....	.....	.....	0.58
Eagle Pass	.....	16	28.8	0.62
Farley's Camp	.....	24	46.2	0.00
Fort Apache	62	11	34.4	1.65
Fort Bowie	59	19	41.8	0.69
Fort Grant	60	20	39.6	0.82
Fort Huachuca	51	18	33.8	0.15
Fort Lowell	75	16	47.7	0.38
Gila Bend (1) *	66	38	51.8	0.00
Gila Bend (2) *	70	36	49.3	0.00
Grand Central Mill	.....	.....	.....	0.15
Holbrook †	51	11	30.6	0.20
Maricopa *	61	43	50.3	0.02
Natural Bridge †	.....	.....	.....	0.30
Oro	.....	.....	.....	1.10
Pantano *	60	26	44.2	0.40
Payson	.....	.....	.....	0.41
San Carlos	74	18	43.5	0.75
San Simon *	68	16	41.2	0.35
Show Low †	.....	.....	.....	1.50
Signal †	70	25	46.3	0.00
Simmons	.....	.....	.....	T.
Springerville	.....	.....	.....	0.25
Strawberry	.....	.....	.....	0.33
Teviston	.....	.....	.....	0.02
Texas Hill *	71	24	46.7	0.00
Tip Top †	.....	31	43.8	0.00
Tucson (1) †	67	22	44.9	0.16
Tucson (2) *	81?	43?	62.9?	0.12
Walnut Grove †	.....	.....	.....	0.00
Walnut Ranch	.....	.....	.....	0.87
Whipple Barracks	62	11	34.0	0.00
Willcox *	69	9	37.4	0.54
Wilgus	.....	.....	.....	0.90
Wood Cañon	.....	.....	.....	0.30
Woodruff	.....	.....	.....	0.50
Yuma	70	34	49.6	0.00
Arkansas.				
Arkansas City †	.....	.....	.....	3.29
Brinkley	64	32	47.7	6.94
Camden †	65	25	42.7	6.22
Conway	60	24	41.2	5.37
Dallas	58	22	40.4	7.36
Dardanelle	.....	.....	.....	5.90
Devall's Bluff	65	20	41.2	6.04
Fayetteville *†	64	18	37.6	1.29
Forrest City †	64	32	47.2	6.84
Fulton †	.....	.....	.....	5.63
Harrisburgh	58	22	39.1	5.08
Helena (1) †	.....	.....	.....	5.75
Helena (2)	64	23	41.0	9.03
Hot Springs	59	21	40.4	7.00
Lead Hill *	71	13	38.3	2.25
Lonoke	65	27	45.0	6.94
Malvern g	64	28	45.8	5.05
Mount Nebo	63	21	39.8	5.54
Newport (1) †	.....	.....	.....	5.61
Newport (2)	60	20	37.8	5.19
Osceola	65	22	40.4	6.33
Ozone	60	18	37.8	3.47

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arkansas—Cont'd.	°	°	°	*Ins.*
Pine Bluff	66	23	41.8	4.19
Russellville	64	23	41.2	5.62
Stuttgart	62	25	42.2	6.98
Texarkana	67	25	45.3	2.08
Winslow	58	20	35.8	4.17
California.				
Alcade *	65	25	47.0	0.15
Alcatraz Island	66	39	50.0	1.01
Almaden *	65	32	50.0	0.70
Anaheim *	72	38	54.1	0.24
Anderson	76	22	50.0	1.13
Angel Island	73	35	51.0	1.20
Antioch *	64	28	47.8	0.41
Aptos *	72	28	49.1	1.08
Arcata	.....	.....	.....	3.62
Athlone *	75	25	47.8	0.34
Auburn *	69	32	48.0	0.88
Bakersfield *	68	30	47.3	0.20
Beaumont *	68	28	49.8	0.00
Belmont *	68	28	49.0	0.00
Benicia Barracks	70	30	48.2	0.65
Berendo *	65	28	44.7	0.62
Berkeley	68	35	49.9	1.13
Bishop Creek *	65	19	38.2	0.00
Boca *	55	—19	25.0	1.25
Borden *	68	29	44.6	0.40
Brentwood	62	27	47.8	0.42
Brighton *	75	29	47.5	0.47
Byron *	75	28	50.0	0.25
Caliente *	65	27	45.5	0.19
Calistoga *	76	23	47.7	1.65
Castroville *	78	33	52.5	0.48
Centreville *	72	34	52.5	0.65
Chico *	72	31	50.0	1.36
Cisco *	43	13	29.5	2.20
Colegrove	.....	.....	.....	0.23
Colfax *	74	33	53.5	1.95
Colton *	78	30	52.1	0.00
Corning *	68	28	49.5	0.70
Crescent City	.....	.....	.....	5.23
Davisville *	70	31	49.1	1.10
Delano *	67	32	47.6	0.18
Delta *	72	27	48.2	3.72
Downey *	69	33	50.4	0.35
Edgwood *	54	12	33.1	0.55
El Dorado *	69	27	45.1	1.07
Elmira *	72	28	46.9	0.75
El Verano *	70	27	48.8	1.42
Emigrant Gap *	52	16	33.6	1.70
Esparto *	66	28	50.2	0.58
Evergreen	.....	.....	.....	0.58
Farmington *	74	27	47.8	0.43
Felton *	71	20	47.7	1.26
Fernando *	74	31	52.4	0.30
Florence *	85	31	54.8	0.00
Folsom *	64	31	47.1	0.60
Fort Gaston	57	27	42.4	4.38
Fort Mason	66	37	50.0	0.79
Fresno *	62	30	47.3	0.72
Fruto *	74	30	48.7	0.43
Galt *	85	30	47.0	4.31
Georgetown †	68	27 i	45.8d	0.06
Gilroy *	72	26	46.9	0.75
Girard *	62	24	39.5	0.00
Glen Ellen *	75	25	47.1	1.45
Goshen *	68	25	42.6	0.30
Grass Valley	.....	.....	.....	1.54
Haywards *	61	31	47.1	0.77
Hollister *	77	26	50.6	0.46
Hornbrook *	56	13	34.9	0.35
Hydesville	64	26	45.1	3.32
Ione	63	23	45.0	0.40
Iowa Hill *	72	30	46.6	1.96
Jolon	.....	.....	.....	0.55
Julian *	65	30	44.8	0.07
Keene *	62	22	41.3	0.23
Kingsburgh *	65	25	45.8	0.58
King City *	72	22	46.3	0.40
Knight's Landing *	61	32	46.7	0.53
Lathrop *	68	28	47.5	0.25
Laurel *	71	29	46.4	1.22
Lemoore *	65	25	44.7	0.15
Livermore *	80	28	50.5	0.54
Livingston *	70	23	47.1	0.37
Long Beach *	72	29	52.8	0.20
Los Angeles *	82	30	53.9	0.20
Los Banos *	66	25	45.8	0.07
Los Gatos (1) *	68	28	51.3	0.92
Los Gatos (2)	65	30	48.0	1.10
Martines *	62	30	46.4	0.79
Milton (near)	61	32	48.0	0.39
Marysville *	85	28	51.4	0.54
Menlo Park *	68	29	48.7	0.69
Merced *	103	28	52.6	0.33
Modesto *	75	28	49.4	0.16
Mojave *	67	24	44.1	0.00
Monson *	63	27	44.0	0.39
Montague *	52	24	34.0	0.70
Monterey *	66	26	46.0	1.06
Monterey (Hotel del Monte)	71	30	51.5	0.00
Napa *	69	25	48.6	1.17
National City *	83	31	54.0	0.62

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Newark *	72	30	50.2	0.85
Newhall *	87	22	50.2	0.31
Newman*	65	29	48.2	0.28
Niles *	78	29	53.7	0.64
Norwalk *	80	30	54.1	0.20
Oakland (1)	77	30	51.2	0.95
Oakland (2)*	70	32	50.8	0.87
Ogilby *	80	39	55.7	0.00
Ontario *	72	36	53.1	0.23
Orland *	77	31	51.7	0.55
Oroville *	70	35	49.8	2.50
Pajaro *	71	29	49.3	1.16
Paso Robles *	68	20	44.0	0.52
Petaluma *	73	28	49.0	0.97
Placerville (1)*	69	24	42.7	1.40
Placerville (2)*	60	21	40.9	.....
Pomona *	88	29	53.9	0.00
Porterville *	69	29	46.9	0.36
Presidio of San F...	70	34	52.2	1.02
Puente *	78	27	52.3	0.00
Ravenna *	70	26	50.8	0.00
Red Bluff *	90	30	49.5	1.23
Redding *	75	30	50.3	1.68
Riverside	78	26	49.3	0.00
Rocklin *	65	30	48.1	0.50
Rumsey *	69	30	49.9	0.87
Sacramento (1)	60	21	41.0	0.58
Sacramento (2)*	66	30	48.5	0.43
Salinas (1) *	71	32	46.8	0.59
Salinas (2)*	62	30	47.6	0.75
Salton *	80	28	53.5	0.00
Sanger Junction*	67	27	31.5[h]	0.55
San Ardo*	75	24	41.2	0.43
San Diego B'ks	79	34	54.4	1.33
San Gabriel *	80	31	52.2	0.07
San José *	68	30	49.0	0.55
San Mateo *	62	30	47.5	0.90
San Miguel*	69	23	44.8	0.42
San Pedro*	72	40	56.2	0.20
Santa Ana*	76	34	51.3	0.20
Santa Barbara (1)	77	35	54.4	0.45
Santa Barbara (2)*	70	35	50.2	0.50
Santa Clara	74	28	.....	0.46
Santa Cruz (1)*	72	33	51.0	1.05
Santa Cruz (2)*	68	26	49.2	0.77
Santa Margarita*	70	16	38.8	0.97
Santa Maria	74	30	47.2	0.63
Santa Monica*	78	32	53.1	0.40
Santa Paula *	72	36	55.8	0.48
Santa Rosa*	69	27	49.2	1.25
Selma*	65	27	44.5	0.48
Seven Palms*	85	40	56.6	0.00
Shingle Springs*	63	25	41.1	1.40
Sims *	69	22	42.1	4.01
Sisson *	54	11	34.3	0.40
Soledad *	70	24	46.7	0.31
Sonoma	74[d]	27[d]	50.0	1.40
Soquel *	70	30	52.8	0.00
South Vallejo*	68	30	48.8	0.68
Spadra *	80	29	50.2	0.06
Steelec†	74	31	52.0	0.81
Stockton (2)*	64	29	47.1	0.00
Summit*	42	8	26.8	1.50
Suisun City *	78	30	48.7	0.76
Susanville	50	4	31.6	1.00
Tehachapi *	60	20	37.3	0.03
Tehama *	60	40	46.9	1.08
Templeton *	70	23	45.6	0.51
Towles *	67	22	41.3	1.81
Tracy *	68	28	47.8	0.33
Traver *	66	28	46.7	0.51
Tropico*	74	27	52.3	0.00
Truckee (1)	46	— 8	25.4	1.22
Tulare *	70	31	48.3	0.35
Turlock *	67	28	46.4	0.18
Upper Mattole	78	28	50.4	5.66
Vacaville (1)*	74	31	46.9	0.79
Vacaville (2)*	74	31	49.0	0.71
Valleton	74	24	45.6	1.88
Valley Springs*	67	30	45.3	0.58
Vina*	71	26	48.3	0.92
Volcano Springs *	82	27	52.9	0.00
Volta *	68	25	46.6	0.15
Walla Walla Ck	54	12	34.5	1.70
Walnut Creek	68	27	43.4	0.57
Westley *	63	26	48.8	0.12
Wheatland	67	28	45.8	0.52
Whittier*	81	40	56.4	0.00
Williams *	70	28	45.2	0.24
Willow (1)	72	27	47.0	0.71
Willow (2)	68	30	44.9	0.67
Winters *	68	28	50.5	0.00
Woodland *	62	28	42.2	0.82
Colorado.				
Abbott †	.....	.....	.....	1.56
Agate *	70	— 2	28.5	.....
Alford †	.....	.....	.....	2.95
Alma†	39	—20	11.2	0.60
Amherst †	.....	.....	.....	1.40
Apishapa†	.....	.....	.....	1.80
Arroya	.....	.....	.....	0.70
Beaver Creek †	.....	.....	.....	1.46
Bennet*	73	0	33.4	1.60
Box Elder †	.....	.....	.....	2.50
Breckenridge †	66	—36	10.2	2.20

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Colorado—Cont'd.	°	°	°	*Ins.*
Brush†	.....	.....	.....	1.10
Burlington†	47	—11	18.8	1.40
Byers*	40	— 4	20.1	1.10
Cañon City†	55	2	31.3	1.12
Castle Rock†	52	—20	21.0	2.00
Chromo *†	26	—19	7.4	2.20
Climax *†	32	—16	7.7	2.95
Como (near)†	35	—18	12.0	0.53
Cumbres *d* †	40	—14	13.4	5.70
Deer Trail *	60	—12	23.1	1.00
Delta †	43	0	22.4	0.46
Dillon †	.....	.....	.....	0.92
Eagle Farm†	.....	.....	.....	3.20
Elkhorn †	.....	.....	.....	2.15
Emma †	.....	.....	.....	0.92
First View*	50	10	27.6	0.45
Fort Collins†	49	—16	22.2	2.32
Fort Lewis	46	—12	17.6	4.40
Fort Logan	60*k*	— 7	25.8*f*	1.42
Fruita †	46	2	24.6	0.25
Greenhorn†	51	— 5	24.4	2.19
Hugo *	55	— 4	27.8	1.25
Husted †	54	—13	22.3	0.57
Idaho Springs *d* †	48	— 9	24.4	1.07
Kirk †	.....	.....	.....	1.50
Kit Carson*	50	— 6	27.5	0.85
Laird †	.....	.....	.....	1.80
Lamar †	55	— 4	25.2	0.90
La Porte	.....	.....	.....	2.19
Las Animas†	54	— 4	22.3	0.85
Lay †	.....	.....	.....	0.55
Leadville †	42	— 9	14.1	0.50
Le Roy *†	45	— 2	22.6	1.70
Livermore	48	—10	26.0	2.07
Magnolia *	36	— 5	19.4	1.10
Minnesapolis †	.....	.....	.....	0.78
Monte Vista †	36	—18	10.5	0.59
Moraine †	44	—13	21.7	2.38
Pagoda (near) *	41	—13	17.1	0.06
Pagosa Springs	39	—19	11.8	1.40
Palmer Lake* †	55	0	24.0	2.68
Parachute †	.....	.....	.....	0.44
Red Cliff†	.....	.....	.....	1.02
Rico* †	30	—15	10.8	1.38
Rifle Falls †	44	— 8	20.8	0.95
River Bend *	56	— 5	25.0	.....
Rocky Ford†	54	— 8	23.3	1.50
Saint Cloud †	.....	.....	.....	3.20
Sanborn †	.....	.....	.....	0.80
San Luis †	49	—18	17.2	0.36
San Luis Ex. Sta †	42	—18	13.6	0.93
Sedgwick	.....	.....	.....	1.10
Sheridan Lake* †	.....	.....	.....	0.90
Smoky Hill Mine *†	.....	— *2d*	.....	3.30
Springfield†	.....	.....	.....	0.80
Stamford†	.....	.....	.....	3.70
Stunner †	.....	.....	.....	1.65
T. S. Ranch †	45	5	24.4	2.20
Thon †	54	— 2	25.2	0.31
Villa Grove †	.....	.....	.....	0.26
Watervale †	.....	.....	.....	2.80
Watkins *	40	— 6	12.2	1.00
Westcliffe †	52	—19	20.8	1.11
Wray †	.....	.....	.....	1.80
Yuma †	.....	.....	.....	2.35
Connecticut.				
Birmingham	.....	.....	.....	10.16
Canton	52	2	27.8	9.29
Colchester	52	11	30.7	.....
Falls Village	.....	.....	.....	7.44
Fort Trumbull	52	16	33.0	5.30
Hartford (1)	49	8	28.9	8.93
Hartford (2)	.....	.....	.....	8.81
Lake Konomoc	.....	.....	.....	9.03
Lebanon	.....	.....	.....	8.52
Mansfield	51	8	28.8	9.24
Middletown	53	8	29.0	9.22
New Hartford (1)*	45	— 4	22.3	8.62
New Hartford (2)	.....	.....	.....	8.67
N. Grosvenor Dale	50	8	29.6	7.36
Shelton	54	8	30.0	10.81
Southington*	49	7	28.3	7.14
South Manchester	.....	.....	.....	7.42
Uncasville	.....	.....	.....	9.26
Voluntown*	51	6	31.4	8.20
Wallingford	.....	.....	.....	9.15
Waterbury	50	3	27.2	10.06
West Simsbury	.....	.....	.....	7.94
Delaware.				
Dover	62	19	36.4	6.14
District of Columbia.				
Washington B'ks	39	22	37.8	6.76
Florida.				
Alva †	87	31	59.1	2.85
Archer	86	22	54.0	1.42
Duke	80	19	50.6	0.71
Eustis *	88	32	56.0	1.69
Fort Barrancas	78	.....	.....	5.91
Fort Meade*	83	25	56.6	1.17
Homeland	83	29	58.7	0.70
Hypoluxo *	.....	42	63.0	1.73
Merritt's Island †	78	38	59.5	1.79
Ocala	80*d*	28*d*	54.6*f*	1.24
Orange City	84	26	54.3	1.69
St. Francis B'ks	78	30	54.2	1.20

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Florida—Cont'd.	°	°	°	*Ins.*
San Antonio *	82	37	57.0	0.68
Georgia.				
Athens (1)	67	26	43.2	9.54
Athens (2) †	65	25	42.2	7.25
Blakely	75	26	50.8	3.48
Diamond*	.....	22	39.3	6.24
Forsyth *	74	30	48.8	7.88
Fort McPherson	65	22	41.2	5.27
Gillsville	65	31	44.4	7.56
Louisville	76	27	47.6	2.45
Marietta †	69	24	40.3	7.09
Milledgeville* †	74	28	46.3	4.30
Point Peter *	.....	26	40.5	7.40
Poulan	79	22	46.6	2.07
Quitman (1)	75	28	50.4	2.40
Rome	.....	.....	.....	6.30
Idaho.				
American Falls †	39	—13	19.8	1.94
Boisé Barracks	43	4	26.1	1.75
Era †	38	— 8	16.6	0.17
Fort Sherman	48	15	34.4	1.92
Henry's Lake	39	—19	14.0	0.91
Mullan*	52	0	30.2	3.29
Payette †	54	6	32.4	0.90
Ruthburg	46	—12	24.1	2.08
Illinois.				
Alton	.....	.....	.....	0.68
Aurora (1) †	52	7	26.6	2.35
Aurora (2)	54	9	28.3	2.86
Beardstown†	.....	.....	.....	0.85
Benson	54	7	30.2	1.69
Belvidere	40	10	26.6	2.28
Centralia	57	10	33.0	1.21
Charleston	55	8	31.9	0.91
Collinsville	58	11	34.2	1.36
Cockrell	42	2	24.8	2.22
East Peoria	55	13	32.6	2.16
Flora	63	6	34.5	2.06
Fort Sheridan	57	11	31.2	1.73
Golconda* †	62	15	36.8	4.58
Grand Tower †	.....	.....	.....	2.55
Greenville	63	4	33.0	1.50
Griggsville *	52	14	32.4	0.87
Hennepin	49	4	27.2	2.36
Irishtown	59	12	35.3	1.45
Jordan's Grove	60	6	33.4	1.88
Lacon *	51	9	29.4	2.45
Lanark	42	2	23.8	1.59
Louisville	60	8	32.5	1.50
Martinsville	60	10	33.9	2.23
Mascoutah	60	5	34.9	1.65
Mattoon	61	10	36.7	1.10
Mount Carmel †	.....	.....	.....	2.83
Olney (1)*	59	10	35.3	2.06
Olney (2)	59	10	33.4	1.71
Oswego *	46	8	27.2	2.71
Ottawa†	53	9	28.9	2.86
Palestine	60	9	32.7	2.00
Pana	58	10	35.6	0.56
Peoria (1)†	.....	.....	.....	1.85
Peoria (2)	56	12	32.2	1.68
Philo	58	9	31.6	0.89
Pontiac	60	10	30.1	0.95
Riley *	42	9	25.8	2.22
Rockford	42	6	26.1	2.72
Rock Island Ars'l	46	2	27.9	2.84
Rushville	60	7	31.2	1.05
Sandwich	48	10	30.6	2.52
South Evanston	50	10	.....	2.52
Sycamore*	43	9	26.5	1.91
Warren	49	0	25.5	.....
Warsaw†	.....	.....	.....	3.00
White Hall*	54	8	34.2	1.21
Winnebago	42	0	25.9	2.30
Indiana.				
Angola	54	6	29.9	2.10
Butlerville *	.....	19	27.6	3.72
Columbia City	54	11	29.9	1.25
Columbus	58	17	33.6	2.70
Connersville	57	14	35.5	3.60
De Gonia Springs	59	15	37.1	5.20
Delphi	55	12	29.7	1.65
Evansville	.....	.....	.....	1.80
Farmland	58	15	33.1	2.80
Franklin	58	14	33.4	3.35
Huntingburgh	66	16	37.1	3.40
Huntington †	.....	.....	.....	1.36
Jeffersonville	59	21	37.0	4.78
La Fayette	57	11	32.0	1.25
Logansport (1)	.....	.....	.....	1.67
Logansport (2)	56	11	32.2	0.85
Marengo	63	21	38.6	4.20
Manzy *	55	8	30.1	3.45
Mount Vernon (1) †	.....	.....	.....	3.78
Mount Vernon (2)	58	14	35.0	4.47
Muncie	57	14	35.1	1.18
Point Isabel *	51	3	26.0	1.85
Princeton	59	9	34.8	3.32
Rockville	57	11	34.7	1.14
Rushville †	.....	.....	.....	2.53
Seymour	59	13	35.6	3.99
Shelbyville	58	22	35.0	1.75
Valparaiso	55	11	30.8	2.09
Vevay	64	18	36.4	4.21
Vincennes	.....	.....	.....	2.38

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Indiana—Cont'd.	°	°	°	*Ins.*
Worthington	58	11	33.0	1.52
Indian Territory.				
Eufaula	.....	.....	.....	1.73
Fort Supply	59	7	32.4	2.67
Healdton	58	30	42.6	3.01
Tulsa †	.....	.....	.....	1.00
Iowa.				
Alta (1)*	50	— 1	24.4	1.78
Alta (2)	50	— 1	25.3	1.36
Amana †	44	1	25.2	1.94
Ames	50	5	25.1	2.25
Bancroft	52	— 4	20.6	1.20
Belle Plaine *	42	4	25.1	2.52
Carroll†	54	— 8	25.4	0.90
Carson	52	4	27.5	1.43
Cedar Falls †	43	2	24.8	1.19
Cedar Rapids †	45	4	26.0	1.89
Clarinda *	49	7	27.0	2.26
Clinton	47	0	26.0	3.84
Concord	.....	.....	.....	1.08
Cresco	45	1	22.4	1.80
Dallas Centre*	.....	12*m*	25.6*m*	1.75
Des Moines *m*	50	10	29.0	.....
Eagle Grove*	36	4	20.1	2.75
Fayette	44	0	23.3	1.68
Fort Madison*	48	12	30.6	0.86
Glenwood (1)	50	5	26.2	2.35
Greenfield	47	4	25.8	2.22
Grinnell †	42	3	24.8	0.88
Hampton	47	— 3	21.8	3.20
Humboldt *	50	2	23.4	.....
Independence *	41	1	25.6	1.54
Iowa City	48	3	28.6	1.49
Larrabee	53*n*	— 4*n*	24.3*n*	1.31
Le Claire †	.....	.....	.....	2.29
Logan†	50	5	30.2	1.79
Manson *	40	— 4	20.0	1.40
Maquoketa *	43	4	25.3	1.60
McCausland *	40	5	27.0	3.99
Monticello *	44	6	25.6	1.25
Mount Pleasant*†	45	13	28.6	2.75
Mount Vernon *	43	5	27.3	.....
Osage *	.....	4	21.4	1.90
Oskaloosa (1) *	48	12	30.2	1.07
Panama	54	3	28.1	1.34
Storm Lake*	46*m*	0*m*	24.3	1.61
Tipton *	47	9	28.7	1.90
Vinton *	40	0	24.2	0.94
Washington *	48	10	30.0	2.32
Webster City *	50	0	22.6	1.87
West Bend* †	.....	.....	.....	1.55
Williams	.....	.....	.....	1.93
Kansas.				
Abilene	60	6	33.3	1.32
Allison *	50	2	23.8	1.36
Alton	53	0	29.2	1.31
Altoona	.....	.....	.....	1.00
Bucklin	.....	.....	.....	1.20
Buffalo Park	54	8	.....	1.08
Burr Oak	60	0	.....	2.37
Cawker City	60	4	30.9	1.30
Collyer	56	8	30.2	0.82
Columbus	.....	.....	.....	1.10
Concordia	54	— 2	28.4	1.75
Cunningham *	57	4	29.4	1.58
Downs	.....	.....	.....	2.01
Elco	59	15	33.9	1.15
Elk Falls †	59	11	37.6	0.82
Ellis	51	2	30.6	0.63
Emporia	65	12	32.8	1.07
Englewood *	58	6	31.4	0.57
Eureka Ranch	53	0	30.3	1.05
Ft. Leavenworth (1)	58	8	32.8	2.81
Ft. Leavenworth (2)	52	9	31.4	2.70
Fort Riley	49	5	29.4	1.88
Fremont	58	— 2	28.2	1.45
Globe *	.....	12	29.1	1.34
Gove City * †	65	5	27.9	1.39
Grainfield	50	10	.....	1.79
Grenola	59	15	34.3	1.20
Grinnell	56	10	30.3	1.30
Halstead	54	9	31.3	1.65
Havensville*	44	— 2	22.4	2.00
Horton	52	11	31.1	2.96
Hoxie	.....	6	.....	1.50
Hutchinson	.....	.....	.....	2.00
Independence	60	12	35.8	1.75
Kansas City	59	13	32.5	2.08
Kellogg	.....	.....	.....	0.91
Kingman	.....	.....	.....	4.35
Kirwin †	.....	.....	.....	0.50
La Crosse	53	0	28.7	0.96
La Harpe *	.....	15	31.5	1.21
Lakin	53	— 3	24.6	0.80
Lawrence	57	10	32.4	1.43
Lebo	60	9	32.6	2.18
Leoti	54	2	26.3	0.98
Lincoln	.....	.....	.....	1.10
Macksville *	.....	.....	.....	0.98
Manhattan (1) †	.....	.....	.....	2.23
Manhattan (2)	57	2	30.0	1.63
Manhattan (3)*	50	8	29.2	2.21
Mankato	59	2	27.9	3.30
Marmaton	55	10	33.5	1.17
McAllaster	48	0	.....	1.70

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Kansas—Cont'd.	°	°	°	*Ins.*
McPherson	.....	.....	.....	0.79
Minneapolis	52	8	29.5	1.15
Monument	58	6	26.9	0.92
Norton	50	0	27.9	1.25
Oakley	56	8	30.2	.....
Oberlin †	.....	.....	.....	0.62
Ogallah	56	10	.....	0.72
Oswego	62	17	37.8	2.07
Page City	55	3	24.9	0.30
Pauline	56	6	34.4	1.05
Plainville	51	10	29.4	1.06
Pleasant Dale	60	— 2	27.2	0.90
Quinter	52	4	26.6	0.87
Rome	60	14	34.7	1.03
Salina *	52	12	31.5	1.38
Sedan *	60	16	34.9	1.60
Seneca	55	6	28.2	1.97
Sharon Springs	58	8	26.4	1.30
Shields	71	— 2	34.0	1.10
Spearville	53	— 3	28.6	1.32
Springvale	55	12	.....	2.90
Tribune†	54	1	24.8	1.30
Wakefield *	56	10	31.8	2.03
Wa Keeney	56	1	30.9	2.00
Wallace(1)	.....	.....	.....	0.24
Wallace(2)	56	0	.....	0.90
Wellington	62	12	36.1	1.95
Weskan	57	7	29.4	0.90
Wilson	50	5	31.0	0.87
Winona	63	12	.....	.....
Yates Centre	.....	.....	.....	1.74
Kentucky.				
Bowling Green †	.....	.....	.....	6.80
Burkesville	.....	.....	.....	3.23
Burnside †	.....	.....	.....	4.97
Caddo *†	67	21	36.2	4.20
Catlettsburgh †	.....	.....	.....	6.54
Canton *	62	21	38.8	6.38
Central City	.....	.....	.....	7.83
Earlington	66	24	41.9	4.79
Eddyville †	.....	.....	.....	3.11
Edmonton	68*k*	18*k*	34.4*k*	5.77
Falmouth (1)†	.....	.....	.....	4.31
Frankfort (1)†	.....	.....	.....	5.41
Frankfort (2)	63	15	36.2	5.41
Franklin *†	65	24	39.4	5.34
Greensburgh †	.....	.....	.....	4.96
Harrodsburgh †	63	14	36.3	5.85
Louisa †	.....	.....	.....	4.11
Mount Sterling †	61	19	36.4	4.35
Newport Barracks	63	18	34.9	2.82
Paducah †	.....	.....	.....	4.08
Pellville †	62	15	36.5	5.02
Princeton †	63	17	37.0	5.30
Richmond	66	17	36.9	.....
Shelbyville †	61	16	36.0	5.55
Williamsburgh	.....	.....	.....	3.90
Louisiana.				
Abbeville	79	31	52.3	11.45
Alexandria †	.....	.....	.....	10.03
Amité City †	74	25	49.0	9.68
Baton Rouge	81	26	50.0	9.35
Cameron †	77	25	51.0	8.65
Cheneyville	80	29	49.0	13.60
Clinton *d*	76	32	44.6	10.57
Coushatta(1)†	.....	.....	.....	6.94
Crowley	75	28	51.4	12.18
Davis	67	21	43.2	6.09
Delhi †	.....	.....	.....	5.31
Edgard	78	31	53.0	6.07
Emilie	77	30	51.1	6.34
Farmerville	66	25	44.4	7.71
Girard	.....	.....	.....	0.06*f*
Grand Cane	65	25	46.6	5.90
Grand Coteau	77	27	50.2	10.43
Homer	67	25	43.8	5.80
Houma	81	20	50.8	7.53
Jackson Barracks	80	30	51.4	3.26
Jeanerette	79	26	53.5	9.68
Lafayette *k*	79	26	50.8	8.78
Lake Charles	75	20	45.6	13.20
Liberty Hill	70	22	45.0	6.29
Luling	77	25	51.0	7.20
Marksville	74	28	48.6	11.34
Maurepas	76	25	51.6	7.29
Melville †	74	28	47.4	12.36
Minden	67	22	45.0	5.47
Monroe †	68	27	45.6	5.17
New Iberia *m*	76	29	54.6	6.69
N. La. Ex. Stat'n	81	26	50.0	9.35
Paincourtville	78	28	52.7	7.33
Plaquemine	81	20	47.5	11.73
Shell Beach	.....	.....	.....	11.02
Sugar Ex. Station	75	32	50.4	5.43
Thibodeaux	.....	.....	.....	6.13
West End	.....	.....	.....	5.25
Winnsborough	73	43	58.2	7.74
Maine.				
Bar Harbor	49	0	25.6	7.21
Belfast *	42	2	22.6	.....
Calais	49	— 3	22.6	9.52
Cornish	44	0	24.4	4.93
Fairfield	47	—20	20.5	6.12
Farmington *	.....	— 6	18.6	6.54
Fort Preble	47	0	24.8	4.15

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Maine—Cont'd.	°	°	°	*Ins.*
Kennebec Arsenal	44	—19	17.6	3.73
Kent's Hill	47	— 4	21.1	6.28
Lewiston	46	—19	21.7	8.10
Orono †	48	—17	21.0	7.66
Petit Menan *	45	10	28.6	.....
West Jonesport	45	0	25.9	.....
Maryland.				
Barren Creek Sp'gs†	63	22	38.4	4.81
Cumberland (1)	54	16	33.2	2.93
Cumberland (2)	59	19	37.0	2.65
Fallston	51	16	34.1	6.27
Fort McHenry	54	18	37.0	2.36
Frederick	55	19	35.5	4.51
Gaithersburgh *	.....	18	31.1	.....
McDonogh	65	18	37.2	4.96
Mt. St. Mary's Col	50	17	31.9	4.84
Taneytown †	.....	.....	.....	4.48
Woodstock	54	19	37.7	46.6
Massachusetts.				
Amherst	52	1	27.4	8.17
Amherst Ex Sta (1)	50	— 1	26.3	6.61
Amherst Ex Sta (2)	52	0	27.6	6.75
Andover	51	5	26.8	4.25
Ashland	.....	.....	.....	7.12
Blue Hill (sum't)	52	11	28.3	6.71
Blue Hill (base)	54	7	29.7	7.35
Blue Hill (valley)	54	5	29.3	6.91
Boston	.....	.....	.....	6.11
Cambridge (1)	51	9	28.0	6.09
Cambridge (2)	54	11	29.2	6.68
Chestnut Hill	54	9	29.3	6.98
Clinton	.....	.....	.....	6.12
Concord	52	2	27.4	5.45
Cotuit	50	12	31.2	7.50
Deerfield	45	— 2	25.7	.....
Dudley *	52	8	28.0	7.57
Fall River (1) *	53	15	32.4	8.98
Fiskdale	.....	.....	.....	6.31
Fitchburg (1)	42	5	26.6	7.06
Fitchburg (2)	51	2	26.7	6.95
Florida *	43*f*	4*f*	23.4	4.26
Fort Warren	55	19	31.7	5.00
Framingham	51	8	28.3	7.02
Gilbertville	48	1	25.8	6.53
Groton (1)	49	0	28.2	6.61
Heath	46	0	24.1	.....
Kendall Green	50	0	28.8	6.91
Lake Cochituate	57	— 1	28.9	6.67
Lawrence	50	— 2	26.8	6.11
Leicester	50	9	26.6	7.19
Leominster	.....	.....	.....	6.97
Long Plain *	51	10	30.9	10.08
Lowell (1)	52	2	26.3	7.05
Lowell (2)	51	0	26.2	.....
Lowell (3)	52	7	28.0	.....
Ludlow (1)	50	0	25.0	7.87
Ludlow (2)	53	0	27.8	7.74
Lynn	47	10	27.4	6.42
Mansfield	52	9	28.9	8.20
Medford	54	1	.....	6.32
Middleborough	53	3	29.2	7.90
Milton *	54	11	31.4	6.52
Monson	49	— 2	26.8	7.33
Mount Nonotuck	.....	.....	.....	7.39
Mystic Lake	.....	.....	.....	6.26
Mystic Station	.....	.....	.....	5.99
Nahant	50	17	30.6	.....
New Bedford (1)	48	12	30.8	8.28
New Bedford (2)	50	11	32.2	9.17
Newburyport (1)	51	7	29.0	6.86
Newburyport (2)	.....	.....	.....	1.60
Northampton	49	5	28.7	.....
North Billerica	53	5	28.6	4.80
Plymouth	53	18	33.6	8.36
Provincetown	49	14	32.9	6.71
Randolph	.....	.....	.....	7.30
Roberts' Dam	.....	.....	.....	6.14
Royalston *	52	10	29.4	.....
Salem (2)	.....	.....	.....	6.21
Somerset *	52	8	32.7	8.94
South Hingham	.....	4	.....	7.58
Springfield Armr'y	52	4	29.3	7.86
Taunton (1)	54	11	31.6	8.34
Taunton (2)	54	11	31.5	8.38
Taunton (3)	55	6	31.0	8.51
Taunton (4)	53	9	29.3	8.40
Wakefield	52	4	27.8	6.23
Waltham	.....	.....	.....	5.71
Wellesley	55	3	29.4	4.98
Westborough *	50	— 2	30.4	6.05
Winchester *	.....	.....	.....	6.20
Worcester (1)	48	5	27.4	9.03
Worcester (2)	57	.....	.....	5.41
Michigan.				
Adrian	50	7	27.6	1.53
Albion (1)	51	9	29.8	1.57
Allegan	53	0	28.0	1.73
Alma	44	1	24.6	2.42
Ann Arbor	48	8	27.4	2.07
Arbela †	.....	.....	.....	0.96
Atlantic *	30	1	17.2	3.20
Ball Mountain	46	7	26.3	1.11
Bangor	53	4	29.8	2.12
Bear Lake	44	— 4	22.7	3.22
Bellaire	45	— 4	23.6	3.68

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Michigan—Cont'd.	°	°	°	*Ins.*
Bell Branch	48	14	29.5	1.39
Benton Harbor	59	13	32.4	2.24
Berlin	44	8	27.0	1.04
Berrien Springs(2)	.....	.....	.....	1.80
Birch Run	.....	.....	.....	1.38
Birmingham	49	8	29.3	1.01
Bronson	52	6	26.0	1.19
Buchanan	55	13	28.8	2.21
Calumet	36	— 3	19.1	1.33
Cassopolis	54	11	30.1	2.71
Caldwell	38	— 7	21.6	4.30
Charlevoix	42	— 1	24.5	3.09
Cheboygan	.....	.....	18.6	2.30
Chelsea	49	4	27.1	0.68
Clinton	51	5	27.5	1.15
Colon	46	8	25.9	1.46
Concord	50	5	27.3	1.00
Crawford	39	1	19.7	.....
Crystal Falls	40	— 3	20.2	1.15
Deerfield	52	9	27.0	.....
Eden	50	5	26.7	1.57
Evart	37	— 9	20.4	2.27
Fitchburgh	48	1	26.5	1.64
Flint	49	4	26.9	1.02
Fort Brady	41	—13	16.6	1.60
Fort Mackinac	44	— 4	21.2	1.99
Fort Wayne	49	10	27.8	1.06
Fremont *	42	2	25.1	2.44
Gaylord	42	—13	19.6	2.30
Gladwin	44	— 4	22.7	1.50
Grape	52	9	30.2	0.83
Grayling	38	—10	21.2	2.19
Gulliver Lake	41	— 7	20.1	3.34
Hanover	54	8	29.8	1.35
Harbor Springs	40	— 9	22.6	1.95
Harrison	40	— 7	22.3	1.57
Harrisville	40	0	22.8	2.52
Hart	43	2	28.7	2.50
Hastings	53	4	28.1	1.32
Hayes	45	9	26.5	.....
Highland Station *	47	7	25.8	1.41
Hillman	40	—12	21.5	1.83
Hillsdale	48	6	26.7	1.34
Holt	.....	.....	.....	1.24
Howell	49	1	26.0	1.07
Ionia	50	6	25.6	1.57
Ivan	41	— 6	22.4	3.27
Jackson	52	8	29.2	.....
Jeddo	47	9	27.8	0.90
Kalamazoo	56	8	29.2	1.56
Lansing	52	4	27.6	1.07
Lathrop	42	—10	19.8	1.74
Madison	50	8	27.4	1.43
Marshall	52	6	28.0	1.51
May	47	6	25.7	2.15
Montague	39	9	25.7	1.70
Mottville	53	10	28.2	1.39
Noble	53	10	28.9	0.92
North Marshall	51	4	24.4	1.23
Northport	41	5	25.5	2.48
Olivet	51	2	26.5	1.01
Otsego	52	0	26.3	1.86
Ovid	49	5	25.8	1.35
Parkville	.....	.....	.....	1.42
Paw Paw	53	1	28.5	1.08
Pontiac	49	12	29.7	1.36
Pulaski *	49	7	27.5	1.08
Rawsonville *	50	8	28.4	1.70
Romeo	47	9	26.3	.....
Rockland	56	— 7	20.2	2.72
Roscommon	38	—15	20.8	4.76
Saint Ignace	39	—10	19.8	2.80
Saint John's	50	6	26.7	1.51
Sand Beach	45	6	26.8	2.40
Standish	56	— 1	22.5	2.33
Stanton	40	— 2	24.0	2.15
Stockbridge	.....	.....	.....	1.08
Thornville	52	10	28.4	1.14
Vandalia	52	11	29.1	1.17
Washington	47	10	28.2	1.34
Weldon Creek	44	— 9	24.0	3.62
West Branch	40	— 5	23.0	2.90
White Pigeon	50	5	26.4	2.00
Williamston	49	7	30.5	1.75
Ypsilanti	45	4	25.6	1.32
Minnesota.				
Alexandria †	.....	.....	.....	0.22
Alma City †	44	— 3	20.4	1.45
Crookston	39	—17	12.8	0.22
Faribault	49	— 2	21.6	1.91
Farmington	44	2	21.4	1.00
Fergus Falls † *m*	.....	.....	.....	0.33
Fort Ripley †	.....	.....	.....	0.29
Fort Snelling	43	— 2	19.6	0.79
Grand Meadow	44	— 3	20.2	1.50
L. Winnibigoshish	40	—20	13.3	0.57
Leech Lake	40	—22	12.4	0.42
LeSueur *	46*d*	0*d*	20.6*d*	0.80
Mankato	46	1	22.4	1.43
Minneapolis *	43	0	20.7	0.86
Montevideo	48	— 7	21.0	0.06
Morris	46	— 7	18.2	0.15
Northfield	45	— 2	21.6	0.95
Ortonville †	.....	.....	.....	T.
Pine River	44	—22	11.7	0.55

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Minnesota—Cont'd.	°	°	°	*Ins.*
Pokegama Falls	42	—26	13.4	0.84
Redwood Falls †	.....	.....	.....	0.79
Rolling Green	44	— 5	18.5	1.90
Saint Charles *†	47	4	24.0	2.50
Sheldon *	.....	— 4	20.6	1.25
Tracy †	.....	.....	.....	0.20
Mississippi.				
Agricultural Col'ge	70	29	45.3	7.64
Batesville	66	22	43.6	5.27
Bay Saint Louis	69	37	52.2	11.10
Booneville	63	25*i*	42.6*f*	4.40
Brookhaven †	75	23	46.8	10.16
Canton †	71	27	45.4	10.06
Columbus †(1)	.....	.....	.....	5.89*h*
Edwards †	76	27	46.8	10.38
Enterprise	77	22	46.9	9.30
Fayette	75	28	48.3	12.55
Greenville	70	30	45.4	3.79
Hattiesburgh	81	30	52.1	4.60
Holly Springs (1) *	65	26	41.0	6.21
Kosciusko †	73	25	44.6	11.00
Logtown †	75	29	51.4	5.80
Louisville †	75	20	44.6	7.28
Moss Point †	74	29	50.6	7.75
Palo Alto	70	27	46.6	7.78
Pontotoc †	69	24	42.8	7.06
Ship Island	71	37	54.0	6.93
Summit *d*	72	26	45.6	11.66
Vaiden	78	23	42.8	8.18
Washington †	76	26	46.5	10.64
Water Valley *	70	24	43.0	5.44
Waynesboro' (1) †	73	23	46.8	4.34
West Point	69	29	44.6	5.67
Yazoo City †	.....	.....	.....	7.35
Missouri.				
Adrian †	60	— 1	31.0	0.97
Appleton City	61	8	35.6	1.30
Austin †*	60	17	34.9	0.85
Boonville	.....	.....	.....	0.65
Brunswick	56	12	33.2	0.85
California	.....	.....	.....	0.20
Carrollton	58	13	32.3	0.60
Carthage	60	18	35.9	1.10
Cassville	62	15	35.6	1.37
Centreville	.....	.....	.....	2.55
Conception	48	7	28.8	1.35
Concordia	60	.....	.....	0.25
Dadeville	.....	.....	.....	0.90
Darksville	66	12	38.2	1.53
Eldon *	68	12	36.6	0.82
Excelsior Springs *	56	11	29.7	1.74
Fayette	60	12	34.2	1.05
Fortescue *	52	7	29.3	3.27
Fox Creek	64	12	36.3	0.40
Glasgow	59	13	34.1	0.77
Gordonville *	62	10	37.0	.....
Grand Pass	.....	14	30.6	0.76
Hannibal *	60	10	.....	0.25
Harrisonville †	54	10	32.5	0.83
Hermann *	54	19	36.2	0.84
Jefferson Barracks	70	10	37.0	1.56
Jefferson City	74	13	39.8	.....
Jerome †	.....	.....	.....	0.40
Kansas City	58	14	33.6	2.78
Kidder	60	9	34.5	2.46
Lamonte	62	14	34.6	0.30
Lebanon *	68	18	38.0	1.20
Liberty	66	10	32.4	0.90
Louisiana Bridge †	.....	.....	.....	0.54
Marshall(2)	62	10	33.8	1.03
New Haven *	55	16	34.7	0.10
Oak Ridge *	65	16	41.1	0.58
Oregon	53	8	29.6	2.95
Pickering	45	— 1	21.8	3.25
Platte River *	56	2	31.1	2.26
Princeton *	55	11	30.3	2.65
Saint Charles (1)	.....	.....	.....	1.00
Saint Charles (2)	56	9	35.0	0.29
Saint Joseph †	.....	.....	.....	1.76
Saint Louis	60	12	35.0	0.41
Sarcoxie	61	14	33.9	1.08
Sedalia	60	13	34.5	0.86
Shelbina	.....	.....	.....	0.30
Steelville *	63	7	38.9	2.72
Stellada	62	8	35.8	0.78
Warrensburgh	60	17	34.1	0.54
Warrenton	.....	.....	33.6*e*	0.98
Wither's Mills *	58	15	35.6	0.65
Montana.				
Camp Poplar River	50	—12	22.0	0.47
Choteau	56	—22	32.8	0.50
Custer	.....	.....	.....	0.25
Fort Assinniboine	54	—11	27.0	0.06
Fort Custer	55	— 1	28.6	0.20
Fort Keogh	50	— 7	25.0	0.12
Fort Missoula	57	3	29.4	0.47
Fort Shaw	59	— 6	33.8	0.35
Glendive †	54	— 3	26.4	0.45
Martinsdale	46	—21	27.7	0.62
Powder River	51	— 6	25.5	0.19
Virginia City	41	— 3	23.0	0.34
Nebraska.				
Alliance †	49	— 2	25.0	1.55
Ansley †	58	— 1	27.6	.....
Ashland	55	3	.....	1.13

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Nebraska—Cont'd.	°	°	°	*Ins.*
Bassett	59	0	25.0	0.35
Beaver City*◊	66	0	28.3	0.20
Burwell*	58	— 2	25.4	0.50
Creighton *†	58	— 1	26.1	0.20
Crete	58	5	28.0	1.96
Culbertson	.....	.....	.....	0.83
David City	50	5	27.8	1.80
De Soto *	55	5	28.7	1.47
Dunning*	54	0	29.1	0.32
Ericson*	68	1	27.6	0.91
Fairbury	47	8	.....	1.63
Fairfield	56	6	29.1	2.31
Fort Niobrara	55	—10	24.8	0.50
Fort Robinson	54	3	28.7	0.95
Fort Sidney †	47	— 5	24.3	5.62[3]
Franklin	53	— 4	28.0	0.56
Fremont*	55	5	29.6	1.88
Genoa †	56	4	27.5	2.68
Gering	51	— 9	28.0	1.80
Grand Island	.....	4	22.8	1.70
Grant	.....	.....	.....	1.50
Harvard	53	5	27.0	1.32
Hastings	58	6	.....	0.80
Hay Springs	47	— 3	25.2	1.49
Hebron	58	4	30.7	2.40
Holdrege	.....	2	24.0	0.70
Howe*	50	10	30.1	1.98
Imperial	50	2	23.7	1.80
Kennedy	45	— 4	27.5	0.65
Kimball	48	— 8	26.0	1.68
Lexington*	62	1	29.4	1.10
Lincoln	57	3	29.4	1.58
Long Pine	70	8	30.0	0.50
Marquette	55	4	.....	1.51
Minden	58	4	27.4	2.34
Nebraska City	55	8	29.9	1.65
North Loup* †	57	—10	26.2	2.51
Oakdale	57	— 6	26.3	0.85
O'Neill	63	3	28.2	0.11
Palmer	56	4	26.5	2.00
Plattsmouth	.....	.....	.....	3.20
Ravenna	56	1	28.2	2.21
Seward*	52	10	26.7	4.05[3]
Superior*	60	7	29.0	2.33
Syracuse *	55	9	29.3	1.61
Tecumseh	52	6	30.6	1.57
Tekamah	57	2	29.8	1.90
Wallace *	52	— 2	27.0	1.06
Weeping Water*	54	5	28.4	2.08
West Hill	55	1	22.4	1.11
West Point	55	0	.....	2.20
Whitman *	52	— 5	25.1	0.35
Wilcox	.....	.....	.....	0.75
York	.....	.....	.....	1.40
Nevada.				
Austin	43	4	25.0	0.45
Battle Mountain*	47	0	25.9	0.10
Belmont	48	5	26.6	0.12
Beowawe*	48	— 6	24.5	0.20
Browns*	50	12	34.7	0.50
Candelaria	50	13	30.9	0.01
Carlin*	38	—20	15.8	0.32
Carson City	58	6	31.6	0.10
Crane's Ranch	.....	.....	.....	0.60
Downeyville	56	8	32.3	0.10
Elko (1)*	46	—12	22.3	0.35
Elko (2)	52	—25	20.7	0.15
Ely	42	—14	18.3	0.65
Eureka	.....	.....	.....	0.60
Fenelon*	64	— 2	24.1	0.52
Genoa	57	3	30.9	0.00
Golconda *	54	— 6	26.0	0.40
Halleck *	40	—20	18.7	0.28
Hawthorne (1)	58	20	33.7	0.21
Hawthorne (2)	62	12	32.4	0.21
Hot Springs*	57	6	28.3	0.00
Humboldt *	38	0	25.4	0.20
Lewer's Ranch	53	8	32.1	0.31
Mill City	68	— 6	29.8	T.
Palisade *	45	— 7	23.7	0.30
Palmetto	59	0	28.4	0.00
Pioche	54	— 1	26.9	0.05
Reno*	52	10	30.9	0.00
Reno State Univ'ty	53	8	32.8	0.06
Tecoma*	38	— 2	18.6	0.00
Toano*	49	— 6	22.3	0.40
Virginia City	49	12	26.7	0.31
Wadsworth*	52	10	31.5	0.00
Wells *	47	—11	23.3	0.50
Winnemucca*	47	— 7	24.6	0.32
New Hampshire.				
Antrim	.....	— 8	.....	3.33
Belmont	.....	.....	.....	6.09
Berlin Falls	44	—26	16.5	.....
berlin Mills *	46	—27	17.3	5.21
Concord	46	— 6	24.3	5.71
East Canterbury	40	0	23.6	5.83
Grafton	48	—17	21.2	.....
Groveton	48	—16	18.8	.....
Hanover (1)	44	—14	21.2	4.52
Hanover (2)	48	—17	20.7	4.41
Lake Village	.....	.....	.....	6.71
Littleton	48	—14	19.2	4.11
Manchester (1)	50	— 2	25.9	7.06
Mine Falls	.....	.....	.....	6.36

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
N. Hampshire—Con.	°	°	°	*Ins.*
Nashua *	52	— 4	25.8	6.61
Newton	48	0	24.9	6.39
North Conway	46	—10	21.6	6.31
Pennichuck Station	.....	.....	.....	6.34
Plymouth	44	—13	21.0	6.09
Stratford	46	—19	20.8	4.65
Walpole	50	—12	20.2	5.68
West Milan	44	—30	17.8	4.86
Wier's Bridge	.....	.....	.....	6.74
Wolfborough	.....	.....	.....	6.44
New Jersey.				
Allaire	56	15	34.0	.....
Asbury Park	53	14	34.4	5.33
Belleville†	.....	.....	.....	8.80
Beverly †	56	16	33.6	6.23
Billingsport L. H*	52	18	34.3	.....
Bridgeton*	57	20	37.8	4.69
Cape May C. H. †	57	18	35.8	6.16
Egg Harbor City	59	14	35.2	6.54
Franklinville	54	17	34.4	6.98
Freehold	57	14	30.0	6.72
Gillette	56	12	31.3	6.46
Highland Park†	56	13	32.4	6.03
Imlaystown*	56	15	34.2	5.34
Junction City	.....	.....	.....	7.43
Lambertville *	54	18	33.9	7.01
Locktown	54	13	31.9	6.06
Madison	55	12	31.4	7.40
Moorestown *	53	16	33.9	5.07
Newark (1)	50	16	33.3	7.11
Newark (2)	.....	.....	.....	8.71
New Brunswick (1)	57	12	32.6	7.70
New Brunswick (2)	57	14	33.3	6.06
New Brunswick (3)	57	14	33.3	.....
Ocean City*	49	18	35.2	6.60
Oceanic *	55	16	35.6	5.85
Rancocas	59	16	.....	5.71
Readington *	56	16	36.5	.....
South Orange †	54	14	31.9	10.55
Tenafly *	52	10	30.8	7.38
Trenton *	56	15	37.0	6.73
Woodbury	58	19	36.6	5.92
New Mexico.				
Albert	60	6	33.6	0.46
Antelope Spring	48	—19	18.0	0.74
Bernalillo	.....	.....	.....	1.00
Chama	50	—10	20.8	2.40
Coolidge	53	9	31.6	.....
Cuba	.....	.....	.....	1.80
Deming	58	22	39.0	0.40
Embudo	.....	.....	.....	1.80
Estalina Springs	46	—12	22.0	0.63
Fort Bayard	61	3	34.8	0.87
Fort Marcy	43	— 6	20.0	1.61
Fort Stanton	52	— 8	26.4	0.03
Fort Union	60	—13	24.2	0.33
Fort Wingate	65	— 4	26.9	0.81
Gallinas Spring †	56	5	33.8	0.58
Hillsborough †	60	4	34.0	0.90
La Luz	58	14	36.2	1.00
Lordsburg	60	13	37.4	0.10
Los Lunas	58	— 8	27.8	1.30
Monero *	36	—12	12.6	1.51
Nogal	.....	.....	.....	3.60
Red Cañon †	52	1	30.0	0.50
Springer	.....	.....	.....	0.25
Taos	.....	.....	.....	0.39
New York.				
Adams Centre	.....	.....	.....	1.94
Addison	48	3	27.9	1.84
Afton	.....	.....	.....	5.05
Akron	.....	.....	.....	1.86
Alabama	46	3	25.6	2.15
Alfred Centre	44	0	23.8	2.22
Ampersand	48	—12	19.6	3.73
Arcade (1)	45	— 2	23.8	1.82
Arkwright	44	9	26.6	.....
Au Sable Forks	...	.....	.....	4.36
Avon	.....	.....	.....	1.99
Baldwinsville *	47	3	26.3	3.07
Binghampton	.....	— 1	25.9	3.30
Blood's Depot	.....	.....	.....	2.09
Boyd's Corners*	52	7	29.1	9.76
Brockport *	44	4	22.5	2.57
Brookfield	48	— 8	23.5	6.22
Canton †	47	—15	17.6	2.57
Central Park, N. Y.	54	17	33.8	6.12
Chenango Forks	.....	.....	.....	2.10
Cherry Creek	.....	.....	.....	3.68
Constableville	42	— 8	19.4	5.84
Cooperstown	45	— 3	23.4	5.54
Davids Island	52	14	31.3	7.17
De Kalb Junction	.....	.....	.....	2.99
Demster	.....	.....	.....	2.57
Deposit	.....	.....	.....	3.73
Dunkirk (1)	48	9	2.88	.....
Dunkirk (2)	.....	.....	.....	2.40
Easton	.....	.....	.....	4.65
Elmira	.....	.....	29.3	2.33
Factoryville	49	0	26.8	3.23
Fleming *	46	5	25.6	0.85
Fort Columbus	52	17	33.4	6.03
Fort Hamilton	51	13	33.8	5.34
Fort Niagara	48	7	28.8	1.26
Fort Schuyler	50	5	30.7	7.11

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New York—Cont'd.	°	°	°	*Ins.*
Fort Wadsworth	51	15	33.2	6.90
Galway	.....	.....	.....	4.65
Geneva	47	6	28.1	2.43
Hammondsport*	45	8	28.5	.....
Hess Road Station	48	2	26.8	2.42
Honeymead Brook*	54	5	26.4	6.91
Humphrey	47	0	27.2	1.82
Italy Hill	41	5	25.9	.....
Ithaca	53	8	30.1	2.99
Keene Valley	52	— 8	17.6	4.23
Le Roy	47	4	26.9	4.12
Liberty	.....	.....	.....	3.14
Lowville	.....	— 5	19.7	3.38
Lyndonville	.....	.....	.....	1.31
Lyons	48	8	27.5	1.09
Lyon Mountain (1)	41	— 8	18.0	.....
Lyon Mountain (2)	.....	.....	.....	5.57
Madison Barracks	43	—11	21.2	2.61
Malone	46	—10	17.5	3.74
Marshland	47	1	27.9	.....
Middleburgh	48	0	24.2	3.50
Middletown *	48	5	28.9	8.00
Minnewaska *	43	4	24.5	9.63
Mount Morris	52	7	28.5	.....
Newark Valley	.....	.....	.....	3.43
New Lisbon*	45	— 6	22.4	4.11
North Hammond	40	—10	20.4	3.20
Number Four	42	— 9	17.8	4.05
Ogdensburgh *	42	—18	14.0	.....
Oxford †	43	— 5	23.4	4.83
Palermo †	47	— 3	24.9	2.44
Palmyra *	45	6	27.6	2.51
Pawling	.....	.....	.....	8.41
Peekskill †	52	10	27.3	7.99
Pendleton Centre *	47	3	24.9	2.14
Perry City	45	— 2	24.9	3.34
Plattsburgh	44	— 9	20.2	1.89
Plattsburgh B'ks	43	—13	17.9	1.19
Port Jervis	48	3	25.8	7.02
Potsdam	46	—15	16.4	3.18
Poughkeepsie	54	— 7	25.1	6.65
Quaker Street †	45	— 4	19.8	4.44
Queensbury	.....	—15	19.8	5.81
Rome	44	— 5	23.4	5.18
Romulus	45	6	25.2	2.74
Rondout	45	0	23.8	11.38
Sand Bank	.....	.....	.....	3.49
Saratoga	42	— 5	21.5	.....
Setauket	53	18	33.5	6.39
Sherman	45	— 1	24.8	2.96
Schodack Depot	.....	.....	.....	5.69
South Canisteo	49	2	25.2	2.53
S. E. Reservoir	.....	.....	.....	8.88
South Kortright	50	—10	23.6	4.67
Syracuse*	44	4	26.6	3.83
Turin *	40	— 7	19.0	5.86
Utica	46	0	24.1	4.18
Wappinger's Falls	.....	.....	.....	7.75
Watertown	46	— 8	22.2	3.44
Watervleit Arsenal	.....	— 3	.....	4.40
Watkins	65	11	31.8	....
Wedgwood	45	3	24.5	2.48
White Plains	50	17	33.1	7.86
Willets Point	52	17	33.5	7.25
North Carolina.				
Asheville	68	18	37.6	4.45
Bryson City	.....	.....	.....	6.51
Chapel Hill *	69	21	41.5	4.59
Currituck Inlet†	.....	.....	.....	3.64
Douglas	67	16	38.6	8.90
Franklin	60	7	34.6	5.20
Highlands	61	10	32.3	8.98
Hendersonville	62	18	37.9	7.80
Lenoir *	67	19	38.0	5.60
Morganton *†	70	16	39.2	6.28
Mount Airy †	68	14	37.6	5.56
Mount Holly †	.....	.....	.....	3.76
Mount Pleasant	66	18	40.4	3.60
Oak Ridge †	66	18	38.0	4.09
Salisbury	62	28	43.2	3.49
Smithfield	68	20	42.6	3.20
Soapstone Mount *	.....	16	36.4	9.62
Washington	71	20	45.6	3.12
Weldon †	67	19	41.2	3.80
Willeyton	68	17	40.3	3.20
North Dakota.				
Fort A. Lincoln	50	— 9	24.8	0.05
Fort Buford	51	—10	21.5	0.19
Fort Pembina	38	—24	8.2	0.88
Fort Yates	53	— 5	25.6	0.05
Gallatin * †	46	—20	.....	0.21
Grafton †	46	—24	11.0	0.34
Grand Forks†	43	—19	13.8	0.27
Kelso †	45	—16	14.7	0.42
Napoleon †	47	—14	20.1	0.12
New England City†	58	— 8	24.5	T.
Steele †	48	—14	19.0	.....
Wahpeton*†	52	—11	18.3	0.05
Wild Rice*†	.....	—15	12.3	0.35
Ohio.				
Akron	52	15	31.0	2.04
Ashland*	50	10	31.0	2.67
Athens	65	14	35.0	3.13
Bangorville	52	9	30.0	2.53
Bellevue *	52	9	28.4	1.00

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Ohio—Cont'd.	°	°	°	*Ins.*
Bement *	50	6	27.9	2.03
Caledonia †	.....	.....	.....	2.55
Canton †	56	16	32.0	2.19
Celina	57	15	34.0	2.28
Circleville (1) †	.....	.....	.....	2.15
Clarksville	58	15	33.0	3.61
Cleveland	57	16	31.8	2.56
Columbus Barracks	57	13	33.4	3.20
Dayton†	58	15	34.0	3.17
Demos	54	16	32.2	2.93
Ellsworth	.....	.....	.....	1.71
Findlay	54	5	30.0	2.43
Garrettsville	51	4	28.4	2.51
Georgetown	59	13	35.0	4.76
Granville	55	6	31.0	3.05
Gratiot *	54	16	33.2	2.88
Greenville *†	55	10	31.0	3.18
Hanging Rock *	64	14	36.0	3.59
Hassan *	56	12	31.3	2.42
Hiram	50	11	29.0	2.44
Hudson	.....	.....	.....	1.70
Jacksonborough	58	18	33.7	3.25
Kenton *†	54	11	30.4	2.43
Leipsic *	53	10	30.0	1.90
Logan	61	13	35.0	3.97
Lordstown	52	8	30.0	2.17
Mansfield †	.....	.....	.....	2.56
Marietta (1)	.....	.....	.....	3.06
Marietta (2)	60	20	37.0	3.84
McConnelsville	60	14	34.0	5.68
Napoleon †	50	7	32.2	1.04
New Alexandria	52	14	32.0	3.86
New Comerstown	55	10	32.0	3.09
North Lewisburgh	54	9	31.1	3.50
Oberlin	53	12	30.0	1.88
O. S. University †	57	13	32.0	3.13
Orangeville *	50	0	28.8	2.05
Pomeroy	60	11	36.0	2.84
Portsmouth (1)	.....	.....	.....	3.96
Portsmouth (2) †	63	18	38.0	3.30
Quaker City	.....	.....	.....	2.60
Shiloh *	52	10	32.3	2.80
Sidney	.....	.....	.....	2.94
Springborough †	.....	.....	.....	2.60
Tiffin	55	13	31.0	1.93
Upper Sandusky	51	12	32.0	1.68
Wapakoneta	56	10	31.0	3.02
Wauseon	53	3	27.9	2.56
Waverly	64	12	36.0	3.97
Waynesville	59	18	33.0	3.23
Westerville	55	13	33.1	3.11
West Milton*	55	16	33.8	3.43
Weymouth	51	5	28.0	1.95
Wheeler	.....	.....	.....	1.90
Wooster †	51	12	30.0	2.97
Youngstown	53	13	32.0	2.41
Zanesville †	.....	.....	.....	2.81
Oklahoma Ter.				
Buffalo †	.....	.....	.....	1.45
Fort Reno	62	13	37.8	2.02
Fort Sill	63	22	39.1	3.80
Guthrie*	67	17	40.5	1.48
Oregon.				
Albany*	58	22	40.9	4.65
Ashland (1)	54	16	37.6	1.38
Ashland (2)	67	18	39.6	1.25
Bandon *	60	27	48.8	6.41
Beulah	43	— 5	22.8	0.17
Burns	.....	.....	.....	0.16
Cascade Locks	.....	.....	.....	9.00
Corvallis	57	19	40.4	3.75
East Portland	61	24	.....	1.64
Eola	61	21	40.8	4.99
Eugene	59	23	41.2	4.65
Forest Grove	58	21	41.6	4.77
Gardiner	60	32	46.0	10.84
Happy Valley	49	— 2	27.4	0.65
Hardman	57	10	31.1	1.00
Heppner †	61	11	38.8	1.14
Hood River	55	26	40.0	2.38
Hood River (near)	55	23	38.7	2.45
Hubbard	58	19	39.4	3.30
Jacksonville	53	19	38.2	1.61
Joseph	41	— 2	21.4	1.72
La Grande	46	9	30.9	2.96
Lakeview	52	— 2	30.6	0.49
Lone Rock	62	10	34.4	1.32
McMinnville	59	22	40.6	5.13
Mount Angel	60	20	41.0	4.08
Pendleton	65	14	38.6	0.87
Silver Lake	55	—14	29.0	0.62
Siskiyou	55	20	36.2	0.28
Telocaset	.....	.....	.....	2.28
The Dalles	55	20	37.5	1.13
Toledo	64	29	46.4	6.66
Vernonia	56	18	40.6	5.15
West Fork	56	24	38.5	4.00
Pennsylvania.				
Allegheny Arsenal	.....	13	35.2	2.55
Altoona	54	13	35.5	2.35
Aqueduct *	49	11	32.8	3.39
Blooming Grove*	48	6	28.6	5.40
Blue Knob *	47	9	26.0	3.45
Brookville†	.....	.....	.....	2.80
Browers Lock	.....	.....	.....	5.94

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Pennsylvania—Con.	°	°	°	*Ins.*
Carlisle	47	12	30.7	4.07
Catawissa †	50	16	30.0	5.26
Chambersburgh	45	11	30.1	2.27
Charlesville	53	0	28.9	2.63
Clarion (1)†	.....	.....	.....	2.93
Coatesville †	56	14	31.9	6.59
Confluence †	.....	.....	.....	4.51
Coopersburgh	54	12	32.1	7.29
Corry	47	— 4	26.5	2.57
Davis Island Dam†	.....	.....	.....	2.33
Doylestown	.....	.....	.....	2.29
Du Bois †	.....	.....	.....	3.02
Dyberry †	47	— 2	24.9	5.30
Eagle's Mere	44	— 4	23.8	5.50
Edinborough *	46	10	26.2	.....
Emporium	51	3	30.2	3.47
F'ks of Neshaminy	.....	.....	34.0	6.11
Frankford Arsenal	60	15	35.8	4.01
Frederick	.....	.....	.....	5.60
Freeport †	.....	.....	.....	3.09
Girardville†	53	10	30.4	8.74
Grampian Hills	46	4	27.0	3.62
Greensborough †	.....	.....	.....	3.19
Greenville	49	4	30.0	1.22
Hamburgh	.....	.....	.....	5.27
Hollidaysburgh	52	3	31.0	3.74
Honesdale	49	0	26.4	4.21
Huntingdon	50	3	29.3	3.58
Indiana	54	3	31.0	4.40
Johnstown†	51	10	31.3	3.47
Kennett Square*	.....	.....	31.7	6.08
Kilmer *	50	12	33.7	4.90
Lancaster 6	56	10	33.9	3.09
Lansdale†	.....	.....	.....	6.03
Le Roy*	47	4	26.2	4.63
Lewisburgh	47	7	29.9	3.33
Ligonier	58	7	30.9	3.39
Lock Haven†	44	1	29.4	4.21
Lock No. 4 †	.....	.....	.....	3.21
Mahoning †	.....	.....	.....	2.82
Mauch Chunk d	52	8	29.7	6.90
McConnellsburgh	51	5	31.6	4.53
Meadville	49	5	28.2	4.12
New Castle	55	6	33.3	2.88
Nisbet *	.....	7	29.0	4.00
Oil City†	.....	.....	.....	2.16
Ottsville	.....	.....	.....	6.76
Parker's Landing†	.....	.....	.....	2.49
Petersburgh *	56	6	30.6	4.29
Philadelphia (1)	.....	.....	.....	4.43
Philadelphia (2)	55	16	36.2	5.18
Phœnixville	56	16	34.5	5.08
Point Pleasant	.....	.....	.....	6.53
Pottstown	50	15	33.9	7.00
Quakertown	54	10	33.6	6.26
Reading	.....	.....	.....	5.15
Ridgway †	.....	.....	.....	2.80
Rimersburgh	49	10	28.0	.....
Salem Corners	46	14	30.2	6.25
Saltsburgh †	.....	.....	.....	3.63
Seisholtzville	.....	.....	.....	7.00
Smethport	47	— 2	27.2	.....
Smith's Corners	.....	.....	.....	5.58
Somerset	54	— 1	29.9	5.51
South Eaton	47	8	28.9	5.47
State College	49	1	28.9	4.11
Stoyestown †	.....	.....	.....	2.65
Swarthmore	54	15	34.1	4.84
Troy *	48	6	29.0	1.90
Uniontown	64	19	36.2	3.41
Warren †	.....	.....	.....	2.27
Wellsboro'ugh *	48	— 4	25.7	6.53
West Chester	54	15	33.6	6.56
Westtown	45*j*	16*j*	35.0*d*	5.64
Wilkes Barre	54	14	31.8	4.59
Wysox	47	6	28.3	3.72
York	54	.....	32.0	3.65
Rhode Island.				
Bristol	49	14	32.4	8.06
Fort Adams	50	11	28.8	5.86
Kingston (1)	50	15	30.6	8.45
Kingston (2)	59	12	31.4	7.31
Lonsdale	.....	.....	.....	7.61
Newport	53	18	35.4	.....
Olneyville	51	16	33.1	.....
Pawtucket	.....	.....	.....	6.57
Providence (1)	51	16	32.0	.....
Providence (2)	50	13	30.4	7.90
Providence (3)	51	14	32.2	7.86
South Carolina.				
Aiken	70	27	46.1	2.99
Belmont	73	23	44.0	5.20
Cheraw †	72	21	44.3	4.42
Columbia Ex. Sta.	75	25	44.6	3.21
Evergreen *	.....	.....	.....	7.12
Greenville †	.....	.....	.....	5.86
Hardeeville	80	26	59.1	1.17
Jacksonborough †	74	22	46.8	2.98
Kirkwood *	.....	21	41.1	3.19
Port Royal*†	72	33	50.2	3.02
Simpsonville *	68	20	41.3	5.91
Spartanburgh (1)†	60	26	42.2	3.50
Statesburgh	72	27	46.1	2.90
Trial *	73	23	43.6	2.32
Walhalla	64	21	41.4	5.58

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
S. Carolina—Cont'd.	°	°	°	*Ins.*
Yorkville	73	22	44.0	4.35
South Dakota.				
Aberdeen	48	— 2	21.2	0.08
Alexandria†	54	— 4	23.8	0.01
Canton †	52	0	25.0	0.80
Clark	50	— 8	22.4	0.00
Elkton*	41	0	17.3	0.72
De Smet*†	.....	— 3	21.6	0.07
Flandreau †	52	— 8	21.4	0.12
Fort Bennett	55	1	27.5	0.04
Fort Meade	55	— 4	31.1	0.78
Fort Randall	57	2	28.2	0.42
Fort Sully	65	3	30.3	0.10
Highmore †	48	—10	25.0	0.00
Howard†	53	— 5	22.5	T.
Kimball*†	56	— 7	22.5	0.40
Millbank*	60	—12	27.0	.....
Onida *	48	— 7	23.0	.....
Oelrichs†	50	—23	24.6	1.35
Parkston*	68	0	28.0	0.12
Saint Lawrence*	53	— 7	25.6	0.27
Scranton *†	50	— 6	25.1	0.10
Sioux Falls *	50	— 4	23.1	0.35
Spearfish *	55	1	31.5	0.82
Vermillion *	48	— 2	24.0	0.50
Webster †	51	—12	25.2	0.86
Wolsey *	54	— 7	23.0	0.12
Tennessee.				
Andersonville	56	17	37.3	5.51
Ashwood*†	62	22	40.4	6.33
Austin *	73	24	40.5	5.93
Carthage †	.....	.....	.....	5.09
Charleston †.	.....	.....	.....	5.87
Clarksville	63	22	39.0	7.32
Clinton †	.....	.....	.....	5.44
Columbia †	.....	.....	.....	7.48
Covington (1)†	63	25	40.8	6.73
Cumberland Gap	67*h*	22*g*	40.89	3.03*g*
Fayetteville †	68	24	39.8	7.57
Florence Station	61	25	39.8	7.78
Franklin	69	19	39.1	7.33
Greeneville	73	19	37.4	3.50
Hohenwald	70	17	40.8	7.20
Jacksborough	69	18	38.5	6.08
Johnsonville †	.....	.....	.....	9.08
Kingston (1) †	.....	.....	.....	5.45
Kingston Springs	70	22	40.2	6.25
Lewisburgh	69	22	39.5	7.92
Loudon †	.....	.....	.....	5.05
Lynnville	66	23	40.7	7.58
Missionary Ridge*	.....	27	39.3	.....
Nunnelly	69	19	40.3	7.40
Parksville †	70	21	41.0	6.89
Riddleton	74	19	40.1	6.32
Rockwood †	.....	.....	.....	6.65
Rogersville	69	19	36.9	3.62
Rugby †	64	15	36.0	5.64
Savannah	68	20	41.0	4.46
Sharps	68	20	40.3	7.37
Springdale	70	16	39.2	4.23
Strawberry Plains†	.....	.....	.....	3.29
Trenton	62	22	38.4	7.77
Union City	63	22	39.1	5.24
Waynesborough	60	16	36.9	4.32
Texas.				
Austin (1)	73	30	49.6	5.65
Austin (2)	71	30	49.8	.....
Brady	69	20	42.8	3.14
Berlin	68	20	45.3	2.67
Brazoria †*	73	27	51.7	10.88
Brenham †	75	35	54.0	9.72
Brownwood†	69	21	43.0	2.54
Burnet	66	26	45.8	4.22
Camp del Rio	79	21	50.1	2.46
Camp Eagle Pass	79	22	51.8	0.90
C'p Peña Colorado	76	5	37.6	1.07
Childress	70	12	34.4	2.96
Coldwater	56*e*	26	28.9*e*	0.67
College Station	78	25	52.8	8.67
Columbia	76	30	52.8	7.82
Corsicana (1)	.....	26	43.4	8.35
Durham †	.....	.....	.....	0.88
Duval	69	29	49.3	6.30
Edinburgh	.....	.....	.....	0.20
Epworth †	59	15	37.2	0.70
Forestburgh *	74*f*	22*f*	40.8*f*	2.53
Fort Bliss	69	15	38.3	0.38
Fort Brown	.....	35	.....	1.63
Fort Clark	74	21	48.6	3.07
Fort Davis	62	13	38.7	0.47
Fort Hancock	68	2	35.5	0.60
Fort McIntosh	82	28	53.3	1.61
Fort Ringgold	90	27	59.0	2.49
Fredericksburgh	70	29	45.5	5.01
Gallinas †	74	23	49.1	3.55
Grapevine *	64	20	44.2	6.15
Graham	66	19	40.1	1.96
Haskell	62	15	40.7	1.76
Houston †	78	25	50.6	13.11
Huntsville	68	28	48.1	10.06
La Grange*†	73	31	50.4	9.06
Longview †	69	26	46.8	9.74
Menardville	66	20	42.8	3.64
Mesquite	67	24	44.3	5.06
Mountain Springs	64	26	43.9	5.54

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Texas—Cont'd.	°	°	°	*Ins.*
New Braunfels	71	26	49.8	6.33
New Ulm	74	28	50.7	2.26
Panhandle	53*f*	10*f*	29.6*f*	0.92
Round Rock	68	28	49.4	7.69
San Antonio	73	25	50.9	5.63
Santa Maria	.....	.....	.....	3.19
Sierra Blanca ‖	89	11	60.1	0.30
Silver Falls	68	12	37.6	1.28
Temple †	79	22	43.9	5.20
Venus	74	24	41.1	5.49
Waco (2) †	71	27	46.4	5.35
Weatherford †	68	14	42.5	3.89
Wichita Falls *	62	15	40.0	4.30
Utah.				
Alta	34	— 4	17.6	5.80
Beaver †	58	— 5	27.2	0.41
Blue Creek *	40	8	25.3	0.80
Corinne	42	3	26.3	1.45
Fort Douglas	46	12	28.2	0.85
Fort DuChesne	44	—13	16.2	0.22
Grouse Creek	.....	.....	.....	0.90
Kelton*	46	0	25.6	0.35
Levan	.....	— 8	16.2	1.73
Loseé †	46	— 1	21.1	T.
Moab †	51	3	27.9	0.60
Mount Carmel*†	.....	4	23.4	0.09
Mount Pleasant	29	— 8	13.2	1.62
Nephi †	39	— 9	20.2	0.79
Ogden (1)	46	6	28.2	1.45
Ogden (2)*†	.....	14	29.0	1.20
Park City	.....	1	17.6	0.90
Parowan *	51	— 4	22.8	1.46
Price †	.....	.....	.....	0.10
Promontory	44	4	27.6	1.30
Provo City	.....	10	24.8	1.15
Richfield†	48	— 9	22.0	0.60
Saint George †	61	14	37.4	0.00
Snowville	61	19	35.0	1.68
Stockton	.....	— 3	20.4	.....
Terrace *	46	0	26.8	0.50
Uintah	.....	10	24.3	.....
Vermont.				
Brattleborough (1)	48	— 5	24.0	6.92
Brattleborough (2)	49	— 1	24.1	.....
Burlington	46	— 4	22.0	2.85
Chelsea *	40	— 3	20.4	4.38
Cornwall	.....	.....	.....	3.60
East Berkshire †	47	—23	15.0	4.23
Hartland	45	—10	22.2	6.09
Jacksonville	45	— 9	22.8	6.85
Lunenburgh *	45	— 3	22.2	3.55
Strafford *	44	— 4	22.2	6.10
Vernon	48	— 4	23.7	7.52
Weathersfield C'tre	43	— 6	21.6	.....
Virginia.				
Abingdon	.....	.....	.....	2.34
Birdsneat *	66	26	41.2	6.00
Bolar *	48	0	27.2	2.20
Casanova	64	21	38.1	4.49
Christiansburgh †	.....	.....	.....	3.40
Dale Enterprise †	59	5	31.6	4.68
Fort Monroe	63	25	41.4	3.90
Fort Myer	58	16	36.0	7.18
Lexington †	60	8	33.4	3.92
Marion d	61	11	35.0	0.90
Mossing Ford *	58	17	35.8	3.71
Nottaway C. H.	68	13	39.5	5.33
Petersburgh †	68	19	39.9	3.25
Richmond †	71	20	44.9	4.30
Salem	67	20	38.3	3.67
Stanardsville	58	24	39.6	4.12
Staunton	61	10	34.5	3.66
Summit	58	12	34.1	.....
Woodstock †	.....	.....	.....	3.35
Wytheville	58	16	34.2	2.06
Yancey's Mills	60	12	36.0	5.01
Washington.				
Blakeley †	60	28	42.4	4.41
Chehalis	62	22	41.8	2.96
Doe Bay †	55	28	42.0	3.53
Fort Canby	61	33	46.7	7.47
Fort Simcoe *†	62	21	38.8	3.17
Fort Spokane	48	20	30.6	0.30
Fort Townsend	58	28	42.3	2.91
Fort Walla Walla	65	17	37.6	0.54
Lapush	50	10	31.7	7.68
Seattle	60	26	42.7	4.33
Tacoma	64	24	43.0	5.42
Vancouver B'ks	62	21	41.2	3.53
Waterville	50	16	29.0	0.35

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
West Virginia.	°	°	°	*Ins.*
Buckhannon †	.....	.....	.....	4.29
Charleston†	.....	.....	.....	4.40
Ella*	53	17	33.8	4.33
Gladesville	58	6	32.6	.....
Glenville	.....	.....	.....	4.72
Harper's Ferry †	.....	.....	.....	2.01
Hinton†	.....	.....	.....	2.36
Kingwood	60	8	26.9	.....
Mont Alto *	.....	10	29.0	.....
Morgantown	.....	.....	.....	3.93
Pleasant Hill *	52	8	31.3	.....
Point Pleasant †	.....	.....	.....	3.59
Rowlesburgh † (1)	.....	.....	.....	2.52
Tannery *	58	12	33.0	.....
Tyler's Creek	56	15	32.4	4.86
Weston	.....	.....	.....	4.29
Wheeling †	.....	.....	.....	3.03
White Sulp'r Sp'gs	.....	.....	.....	2.60
Wisconsin.				
Amherst	45	— 3	20.6	1.80
Bayfield	41	— 5	.....	1.13
Beaver Dam	45	3	.....	0.63
Butternut*†	.....	—10	16.3	1.11
Cadiz	.....	8	24.2	2.32
Centralia	43	— 3	.....	1.16
Chippewa Falls	.....	.....	.....	1.37
Columbus	44	4	25.4	0.83
Delevan	.....	.....	.....	1.29
De Pere	43	0	23.9	1.54
Elroy n	40	0	24.0	0.57
Embarrass*	44	—10	20.7	2.50
Fond du Lac	41	2	22.8	1.11
Greenwood	44	— 3	20.6	1.87
Hammond	.....	.....	.....	0.90 *i*
Hayward	53	—16	18.8	0.85
Hillsborough	43	— 3	21.5	1.15
Honey Creek*	40	6	26.3	2.16
Ithaca	.....	2	23.6	1.45
Janesville	40	2	.....	1.85
Kenosha	43	12	29.3	1.27
Lincoln *	.....	8	25.8	0.40
Madison	44	6	25.2	1.19
Manitowoc	46	— 1	27.6	1.59
Manston k	43	0	24.9	0.25
Medford (1) †	.....	.....	.....	2.13
Medford (2)	40	— 7	19.6	1.85
Menomonie	50	0	21.7	2.05
Neillsville *	43	0	22.6	1.56
Oconto	40	— 3	23.3	1.70
Oshkosh †	40	0	23.1	1.27
Peshtigo	45	— 9	21.0	2.03
Phillips †	.....	.....	.....	1.35
Plover	45	— 5	20.9	1.40
Portage †	48	2	23.9	1.37
Prarie du Chien	49	1	26.7	1.81
Rinelander	40	— 5	17.8	1.20
Wauseka *	.....	3	24.6	.....
Weston	.....	— 1	19.4	1.75
Wyoming.				
Camp Pilot Butte	50	— 9	20.6	1.94
Camp Sheridan	45	— 5	20.4	0.48
Fort D. A. Russell	52	— 7	23.7	1.18
Fort Fetterman	56	—15	25.0	1.00
Fort McKinney	52	2	30.7	1.16
Fort Washakie	49	—10	20.9	1.43
Laramie	43	—13	19.8	0.70
Lusk	49	—11	24.4	0.61
Saratoga	39	— 6	16.3	0.95
Wheatland	36	3	21.5	1.30
British Columbia.				
Esquimalt	54	30	42.2	5.22
New Westminster	55	20	40.0	7.93
Mexico.				
La Logia *	80	42	61.1	0.03
Leon de Aldemas	71	34	55.0	0.66
Mazatlan	77	59	66.6	0.99
Mexico	72	37	52.9	0.00
Pueblo	75	36	53.0	0.00
Topolobampo*	73	55	64.8	0.00
Zacatecas	65	23	46.5	0.25
New Brunswick.				
Saint John	46	— 1	22.5	8.46
Sandwich Islands.				
Honolulu	84	57	72.0	2.12
West Indies.				
Grand Turk Island‡	84	76	79.9	2.47
Hamilton, Bermuda	70	52	63.3	3.62
Havana	86	49	72.3	3.31

Received too late for general discussion of weather for January, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California.				
Mullans	68*j*	26*j*	46.0	0.48
Georgia.				
Lithia Springs	71	29	45.4	2.04
Idaho.				
Kootenai	50	11	31.2	0.75
Iowa.				
Sac City	52	— 2	23.0	1.25
Kansas.				
Morse	57	11	33.2	2.60
Maryland.				
Jewell *	.....	23	38.2	3.63
Michigan.				
Vienna	.....	.....	.....	2.58
New York.				
West Point	45	5	21.3	8.70
Carmel	.....	.....	.....	9.71
Pennsylvania.				
Easton	55	10	30.7	6.42

Reports received too late, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Texas.	°	°	°	*Ins.*
Corsicana (2)	68	26	44.8	6.12
Luling	73	26	50.4	5.70
Panter*	66	24	44.7	4.50
Utah.				
Lake Park	44	9	27.0	1.00
Washington.				
East Sound	58	29	42.8	3.55
Wisconsin.				
Glasgow	45*j*	10m	30.0*k*	1.93
Koepenick	40	—12	14.6	1.95
Indian Territory.				
Woodward	.....	.....	.....	0.97

Received too late for publication in December, 1890.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama.				
Jasper	69	25	48.5	3.53
Union Springs	71	32	50.3	0.77
Arizona.				
Cottonwood	.....	.....	.....	2.60
Florence	75	33	55.2	2.96
Springerville	.....	.....	.....	1.45
Tempe	.....	.....	.....	1.49
California.				
Arcata	.....	.....	.....	4.84
Colegrove	.....	.....	.....	2.72
Mount Hamilton	64	29	45.7	5.39
Upper Mattole	78	32	51.1	9.88
Florida.				
Archer	86	23	56.2	1.29
Idaho.				
Lewiston	55	26	40.0	1.20
Illinois.				
Collinsville	62	10	34.7	1.31
Indian Territory.				
Woodward	.....	.....	.....	0.10
Kansas.				
Leoti	70	7	36.6	0.08
Maryland.				
Jewell*	.....	20	35.2	5.65
Michigan.				
Hudson	50	1	24.8	1.75
Mississippi.				
Palo Alto	76	25	48.4	3.37
New Jersey.				
South Orange	49	8	27.9	4.08
North Carolina.				
Raleigh	67	24	43.0	3.25
Oregon.				
West Fork	53	25	40.7	3.03
Texas.				
Edinburgh	.....	.....	.....	0.18
Utah.				
Lake Park	51	19	33.0	1.38
Virginia.				
Bedford City*	.....	23	35.6	3.26
Washington.				
Waterville	57	20	37.2	0.80
Sandwich Islands.				
Honolulu	84	60	72.4	2.31

Letters of the alphabet denote the number of days missing from the record, thus: the letter *c* indicates three days missing, etc., etc.

*Extremes of temperature from observed readings. †Signal Service instruments. ‡One observation daily at 10 a. m. §Precipitation all snow, and probably too great, owing to drifts. ‖Temperature apparently too high.

Corrections: West Point, N. Y., December, 1890, total precipitation, should be 1.02 instead of 1.15.

Precipitation (inches and hundredths) observed at Strafford, Vt., by H. F. J. Scribner, voluntary observer.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1873	[3.50]	[2.89]	6.60	0.60	1.50	3.85	6.77	3.50	4.30	6.80	2.41	5.35	[48.07
1874	4.15	1.90	3.50	12.20	3.50	1.80	5.60	2.00	3.00	0.50	0.50	2.00	40.65
1875	4.20	1.02	2.95	2.20	3.80	4.80	4.30	4.50	3.50	4.30	2.60	0.15	38.32
1876	2.50	5.00	7.10	3.20	4.20	6.30	5.40	1.50	4.75	3.00	1.70	3.80	48.45
1877	3.20	0.30	5.90	2.50	0.40	4.90	4.50	3.30	2.70	5.30	5.60	1.50	40.10
1878	1.70	2.40	1.55	5.20	3.20	4.20	4.00	4.00	2.40	3.60	3.80	5.90	41.95
1879	3.70	2.40	3.60	2.55	3.80	2.60	3.00	3.50	4.60	1.90	5.50	3.90	41.05
1880	2.70	2.40	2.11	1.80	0.80	3.60	6.10	2.50	6.30	3.10	2.91	1.20	35.52
1881	2.70	2.60	2.50	0.60	3.50	3.20	2.00	3.60	2.30	3.80	4.70	5.60	37.10
1882	2.52	2.90	1.81	1.21	4.30	1.90	4.00	1.40	4.10	1.20	0.90	2.70	28.94
1883	2.40	3.20	2.60	2.00	3.10	3.00	6.00	2.40	3.60	2.60	1.70	2.50	35.10
1884	3.00	4.70	5.20	2.10	4.55	1.60	3.15	3.40	0.70	1.70	4.40	3.80	38.30
1885	4.40	2.00	1.80	1.80	2.00	1.60	4.90	7.90	2.70	5.90	4.30	3.60	42.90
1886	4.60	2.70	2.20	2.60	2.90	2.20	3.90	3.20	4.52	2.03	4.90	2.70	38.45
1887	5.50	5.90	4.30	2.50	2.20	4.70	5.60	5.00	1.70	2.00	3.70	4.20	47.30
1888	3.80	2.00	4.60	3.00	3.60	2.50	3.00	4.70	6.10	4.85	6.20	3.50	47.85
1889	4.80	3.25	4.30	1.40	3.60	5.20	6.50	2.00	5.00	2.90	5.50	3.00	47.45
1890	3.70	4.40	3.70	2.10	7.60	2.90	4.00	8.85	3.95	4.80	2.00	3.30	51.30
Mean	3.50	2.89	3.68	2.75	3.25	3.38	4.60	3.74	3.68	3.35	3.52	3.08	41.42

Interpolated values are given in brackets.

Precipitation (inches and hundredths) observed at State College, Orono, Me., by Prof. M. C. Fernald, voluntary observer.

1870	5.61	4.30	2.11	3.55	1.96	2.07	1.78	3.21	2.23	5.53	5.61	3.04	41.00
1871	2.60	2.53	4.11	3.91	3.63	2.58	1.98	3.85	1.10	7.50	3.58	4.16	41.53
1872	2.18	1.70	5.23	1.93	3.92	4.47	2.68	6.23	3.55	6.01	7.06	3.66	48.62
1873	4.09	2.97	4.70	2.59	1.96	1.32	3.26	1.81	4.74	6.56	5.05	1.74	40.79
1874	4.57	5.50	3.40	3.76	4.74	4.93	2.10	5.39	4.37	1.14	4.06	1.98	45.94
1875	2.00	3.80	4.47	3.85	3.31	4.85	2.11	2.32	5.10	4.75	3.87	1.50	41.93
1876	3.92	8.39	8.20	1.65	3.73	2.56	5.80	.91	4.28	3.91	4.35	4.67	52.37
1877	3.29	1.20	5.67	3.18	1.98	1.64	5.28	1.11	4.78	7.95	2.15	4.36	40.17
1878	5.08	2.41	2.73	3.46	2.14	5.42	4.77	3.00	2.00	4.73	4.91	7.92	48.57
1879	3.28	3.56	3.40	3.51	1.80	4.73	5.79	5.66	4.93	3.49	2.98	3.60	46.73
1880	2.83	2.83	2.86	4.15	2.17	.73	3.32	1.54	3.84	4.15	3.52	1.90	33.84
1881	2.08	3.35	3.64	1.28	4.85	3.38	2.72	5.89	2.35	3.57	2.81	6.88	42.80
1882	4.19	3.96	5.20	2.05	4.52	4.44	3.10	1.64	6.44	1.09	1.78	2.85	41.26
1883	2.44	2.34	1.89	3.80	5.10	3.66	6.90	.53	2.23	4.97	3.75	2.99	40.60
1884	4.44	6.85	4.37	3.38	5.42	1.37	2.38	3.12	2.19	2.70	3.99	4.74	44.95
1885	4.73	4.45	2.78	2.34	3.38	4.60	4.71	7.36	2.52	5.12	5.37	5.64	53.00
1886	6.64	5.42	2.87	1.80	4.67	2.74	1.05	2.27	4.11	1.42	8.76	6.38	48.13
1887	7.56	5.89	5.88	5.08	1.25	3.36	7.11	4.60$_{20}$	.95	3.00	3.48	4.72	52.88
1888	4.97	6.11	6.48	1.78	2.82	3.65	2.47	4.59	6.97	7.51	6.43	4.96	58.74
1889	5.37	5.20	4.62	1.93	1.86	4.93	3.23	1.65	2.21	4.04	4.50	3.40	42.94
1890	3.33	4.52	5.81	2.02	10.52	3.84	3.84	4.55	4.47	3.36	2.67	4.10	53.03
Mean	4.06	4.16	4.31	2.90	3.60	3.41	3.46	3.59	3.32	4.25	4.59	3.94	45.59

Mean temperature (degrees Fahr.) observed at Southport, N. C.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1822	50.3	53.0	60.4	66.7	74.7	78.7	81.4	80.6	76.1	70.8	66.7	55.0	67.9
1823	52.1	46.6	58.7	67.3	74.2	76.9	80.8	79.9	75.9	65.9	55.6	54.3	65.7
1824	55.3	50.7	58.4	64.0	71.9	78.0	82.9	80.5	75.2	68.9	60.4	57.3	67.0
1825	51.8	54.3	62.0	62.1	73.4	80.0	81.1	80.2	75.0	68.8	57.0	48.5	66.2
1826	47.5	56.4	63.1	66.3	74.3	81.3	81.6	80.8	79.4	71.1	61.0	54.1	68.1
1827	45.4	58.8	59.6	.....	.....	.....	.....	.....	.....	65.7	57.5	59.2	.....
1828	58.1	61.6	62.0	63.6	74.2	80.5	79.7	81.3	74.2	67.3	61.3	59.2	68.6
1829	50.8	46.6	52.4	62.3	70.9	79.2	80.4	80.8	75.2	67.1	59.3	52.3	[64.8]
1830	30.4	50.4	59.2	64.2	71.9	77.5	81.6	80.2	76.1	66.6	62.4	53.6	[66.2]
1831	43.0	44.3	55.7	64.2	70.8	79.7	80.6	80.9	78.2	68.0	56.8	41.6	63.7
1832	45.6	55.9	54.5	64.3	72.8	77.3	80.2	80.1	75.8	68.4	62.2	57.7	66.2
1833	50.4	51.1	54.3	63.9	76.1	80.8	82.4	77.3	76.9	64.2	53.7	47.6	64.9
1834	43.0	53.6	57.2	61.9	69.6	80.1	83.1	79.2	76.0	67.1	55.4	49.5	64.6
1835	45.4	39.9	50.7	63.4	72.8	79.3	80.2	79.6	71.3	65.6	62.1	48.4	63.2
1836	46.9	44.7	48.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1843	52.0	47.0	46.5	61.5	70.5	76.5	82.5	82.0	80.9	64.0	58.0	49.1	64.1
1844	43.6	45.7	54.3	64.6	76.9	77.8	82.5	79.2	75.3	63.6	59.8	48.5	64.3
1845	50.9	49.0	56.6	66.4	70.7	79.3	82.8	.....	.....	.....	.....	.....	.....
1871	48.8	[52.0]	61.5	66.3	71.8	80.7	81.4	81.1	72.5	68.3	55.7	45.6	[65.5]
1872	42.7	45.2	47.6	62.9	73.0	78.9	83.3	81.7	76.7	63.5	52.6	41.6	62.5
1873	45.6	49.0	50.3	62.1	71.6	78.3	81.8	81.6	78.1	65.3	55.4	51.0	64.2
1874	51.1	49.9	58.1	63.9	72.0	81.6	.....	.....	.....	.....	.....	.....	.....
1875	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55.9	51.2	.....
1876	51.1	50.9	53.6	61.5	69.1	78.7	82.2	81.0	75.5	60.8	53.3	39.5	63.1
1877	44.9	48.3	53.0	59.9	66.1	76.9	81.3	80.1	74.0	66.3	57.2	50.2	63.2
1878	46.0	48.3	58.4	63.7	70.3	74.6	81.8	80.8	75.6	64.8	54.9	45.1	63.7
1879	44.1	44.2	54.9	59.9	69.4	76.2	80.4	78.1	71.9	68.7	54.8	55.0	63.1
1880	55.6	53.4	57.4	63.7	72.9	78.5	82.3	80.3	74.6	64.6	52.6	44.7	65.0
1881	42.9	47.3	50.9	56.4	70.2	78.4	79.9	78.9	77.8	69.2	58.0	51.2	63.4
1882	79.0	52.0	56.0	62.2	68.0	76.9	79.3	79.4	73.5	66.6	51.0	44.5	63.2
1883	45.8	52.1	48.8	59.2	68.5	77.2	81.5	78.1	72.4	65.7	55.8	51.7	63.1
1884	43.2	54.8	56.2	59.4	71.5	74.1	80.3	77.1	75.9	68.0	55.5	49.3	63.8
1885	46.6	42.5	45.8	59.2	69.2	76.4	80.6	79.5	74.0	62.1	54.0	46.5	61.4
1886	40.0	43.7	50.4	60.9	70.2	76.0	79.5	77.4	75.3	63.5	54.1	46.6	61.4
1887	43.2	53.7	50.8	60.4	72.0	76.2	81.0	77.8	71.0	64.2	57.5	48.4	63.0
1888	46.4	49.6	51.3	61.6	74.4	74.8	77.9	80.2	74.2	62.9	57.3	43.4	62.6
1889	49.4	44.6	50.2	59.5	70.0	76.2	79.6	76.2	71.6	62.6	56.8	54.6	62.6
1890	56.0	56.2	53.6	60.4	71.4	79.4	78.6	77.2	75.0	64.4	56.6	46.4	64.6
Mean	47.4	49.9	54.7	62.6	71.6	78.1	81.1	79.7	75.2	66.0	57.1	49.9	64.4

Interpolated values are given in brackets.

Mean temperature (degrees Fahr.) observed at Lenoir, N. C., by Dr. R. L. Beall, voluntary observer.

1871	.....	.....	.....	.....	.....	.....	.....	.....	75.4	64.4	62.3	.....	.....	.....
1872	33.9	38.8	41.1	58.0	67.3	71.2	76.2	74.6	67.3	53.9	39.9	33.0	54.6
1873	35.3	40.0	43.9	55.9	64.5	71.0	75.1	73.9	67.2	52.5	42.4	40.4	55.2
1874	39.7	41.2	48.8	52.8	64.2	75.0	74.3	70.4	66.5	48.0	45.3	39.8	55.5
1875	32.3	30.3	47.0	54.4	64.6	72.0	76.0	72.3	64.5	51.7	46.5	41.0	54.4
1876	43.2	43.8	45.3	55.7	61.2	71.3	77.6	[73.2]	[65.4]	51.4	44.8	29.1	[55.1]
1877	35.9	42.3	35.1	59.4	60.8	70.0	77.7	77.0	61.8	54.5	44.7	32.2	54.3
1878	35.0	38.7	51.6	57.3	63.8	70.7	76.1	75.2	55.2	60.4	48.8	37.8	56.4
1879	35.5	43.6	50.3	54.6	65.5	73.1	71.2	72.2	69.2	58.0	46.9	44.3	57.0
1880	46.0	33.5	49.5	55.0	66.7	74.7	75.7	73.5	64.5	56.0	41.0	35.0	55.9
1881	33.0	38.0	43.0	54.5	66.6	73.0	76.8	75.2	57.2	64.5	46.3	43.0	55.9
1882	39.6	45.0	48.4	58.5	62.1	70.6	73.0	71.8	69.2	65.2	44.8	33.5	56.8
1883	34.0	45.0	43.5	57.5	61.1	72.7	75.5	73.5	67.0	56.5	47.2	40.1	56.1
1884	30.3	44.9	49.2	52.8	59.6	65.2	66.4	73.3	71.1	64.4	46.5	41.2	55.4
1885	37.9	32.8	40.1	59.0	55.7	72.8	75.1	75.1	61.2	53.4	42.8	37.9	53.7
1886	34.0	35.4	45.3	56.9	66.0	70.0	73.3	73.1	69.5	58.1	44.7	35.4	55.1
1887	30.4	46.5	[45.7]	60.0	67.8	63.6	[75.0]	70.6	65.6	54.0	42.8	37.7	[55.0]
1888	37.5	43.5	45.2	58.0	63.4	72.4	77.2	73.4	63.8	52.3	48.6	37.1	56.0
1889	38.1	35.9	47.6	58.7	63.9	69.0	74.0	70.4	65.8	54.0	47.0	48.9	56.1
1890	46.5	49.0	44.4	57.8	64.9	73.8	73.0	70.0	68.1	55.0	49.8	38.9	57.6
Mean	36.7	40.4	45.5	56.7	63.7	71.2	74.7	73.2	65.2	57.0	45.3	38.2	55.6

Precipitation (inches and hundredths) observed at Fort Brooke, Fla., by U. S. Army surgeons and voluntary observers.

1840	2.60	1.00	3.20	1.90	8.85	6.72	24.52	23.40	7.75	4.80	4.56	0.56	89.86
1841	0.88	2.54	2.80	0.30	0.30	8.95	10.60	8.10	5.61	3.31	3.10	2.40	48.89
1842	0.30	2.83	0.10	2.70	2.80	2.90	11.00	12.50	4.00	3.20	2.00	1.63	45.96
1843	3.37	5.70	7.20	1.30	2.00	6.90	8.61	6.60	9.90	2.60	0.80	1.30	56.28
1844	1.10	3.30	1.80	0.10	5.50	4.70	7.70	15.77	3.50	2.20	3.10	2.90	51.67
1845	3.80	0.15	0.40	0.20	4.03	4.51	12.30	8.23	12.69	2.14	1.00	3.61	53.06
1846	3.01	4.97	7.73	2.93	4.44	8.17	8.80	9.03	1.33	3.11	0.18	0.50	54.20
1847	2.24	3.25	4.38	1.61	1.00	4.68	7.22	4.80	10.23	2.01	0.28	4.50	46.20
1848	0.36	0.21	0.05	1.23	2.30	10.59	21.31	14.80	.....	.....	.....	.....	.....
1849	.....	.....	.....	.....	.....	.....	8.74	6.32	3.55	1.74	0.77	1.13	.....
1850	1.44	5.92	3.50	1.65	3.98	2.05	11.98	5.43	2.71	2.89	[1.91]	[2.62]	46.08]
1851	.....	.....	.....	.....	2.03	6.57	3.18	6.35	6.93	1.85	2.10	3.00	.....
1852	0.95	0.85	6.40	3.05	3.06	13.20	10.95	14.30	10.00	0.30	3.20	3.00	69.26
1853	4.55	1.60	3.35	0.75	0.30	9.09	4.12	4.67	4.36	1.70	2.90	7.38	44.77
1854	3.83	6.89	2.44	8.82	6.21	9.44	15.53	11.23	4.68	1.77	1.75	4.85	77.44
1855	2.34	2.88	3.09	0.75	1.77	7.07	[10.33	5.64	1.45	1.10	1.89	2.42	40.73]
1856	5.28	4.83	0.81	0.00	[2.83]	5.65	22.24	8.30	3.80	0.11	0.44	1.64	55.93
1857	1.80	0.10	3.68	0.91	0.36	5.56	7.41	6.39	1.97	[2.21]	2.74	2.83	35.96]
1858	1.12	3.44	4.20	0.48	2.54	6.03	13.29	.....	.....	.....	.....	.....	.....
1869	.....	.....	.....	.....	1.63	6.76	8.19	.....	.....	.....	.....	.....	.....
1871	.....	.....	.....	.....	.....	.....	5.30	13.45	.....	1.60	2.80	3.00	.....
1872	0.80	3.90	2.40	3.05	0.40	7.80	6.65	9.80	4.40	3.80	3.40	1.10	47.50
1873	6.40	[2.90]	1.85	1.40	3.63	10.70	4.70	12.75	7.40	0.70	0.90	2.50	55.83]
1881	.....	.....	.....	.....	.....	5.34	3.10	5.32	4.24	0.28	0.54	2.24	.....
1882	3.72	0.82	1.81	3.88	2.40	5.28	10.44	11.28	2.22	5.28	1.64	[2.62]	51.39]
Mean	2.49	2.90	3.06	1.85	2.83	6.90	10.33	9.76	5.37	2.21	1.91	[2.62]	52.23

Interpolated values are given in brackets.

Table of miscellaneous meteorological data for January, 1891—Signal Service observations.

Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches.			Temperature of air, in degrees Fahrenheit.								Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal precipitation.	Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths.		Mean temperature data since opening of station.				
		Mean actual.	Mean reduced.	Monthly range.	Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.					Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					8 a. m.	8 p. m.	Length of record, years.	Highest for month.	Year.	Lowest for month.	Year.
New England.					29.8	+ 1.0									0.52	+ 2.34															
Eastport	53	29.90	29.96	1.76	24.2	+ 3.9	49	30.3	— 1	18.2	35	2	16.9	74.2	5.50	+ 1.45	9,706	n.	48	ne.	5	12	4	15	16	5.8	6.2	18	28.0	1889	13.1	1875
Portland	99	29.88	29.99	1.97	23.9	+ 3.8	48	30.4	1	17.4	33	4	18.5	81.4	7.72	+ 4.19	6,507	n.	50	se.	22	7	9	15	16	6.5	5.9	20	32.3	1880	14.3	1888
Manchester	247	29.74	30.01	1.92	25.6	.....	53	33.7	0	17.5	42	4	18.2	78.6	6.10	+ 2.23	4,075	nw.	25	w.	12	8	9	14	16	6.4	5.6	4	29.9	1889	14.2	1888
Northfield	872	29.05	30.05	1.84	17.6	.....	44	26.6	—15	8.7	40	3	12.6	79.1	3.79	.....	6,294	s.	45	sw.	23	5	6	20	17	7.1	6.8	4	23.7	1889	7.1	1888
Boston †	125	29.87	30.01	1.84	31.1	+ 5.7	56	37.6	12	24.6	23	3	25.2	81.7	6.98	+ 2.50	8,725	w.	48	sw.	12	5	11	15	14	7.0	6.3	21	35.8	1889	20.0	1888
Nantucket	14	30.00	30.01	1.54	33.9	.....	52	38.9	12	28.9	25	2	30.0	84.6	4.51	.....	9,156	nw.	50	n.	25	10	7	14	13	6.8	5.0	5	37.7	1889	25.3	1888
Wood's Holl	22	.....	.....	.....	32.2	.....	52	38.5	14	26.0	21	5	.....	.....	6.95	+ 3.48	12,896	nw.	72	w.	12	9	9	13	13	...	5.4	14	38.8	1880	21.9	1888
Vineyard Haven	.....	.....	.....	.....	34.8	.....	54	41.9	12	27.6	28	5	.....	.....	5.20	.....	.....	*	...	.....	...	5	10	16	14	...	...	...	...	...	...	...
Block Island	27	30.00	30.02	1.61	34.4	+ 3.2	52	39.6	20	29.2	20	4	29.2	82.8	4.25	— 0.19	13,693	ne.	72	ne.	25	8	12	11	14	5.6	4.6	11	37.0	1890	24.8	1888
Narragansett Pier	22	.....	.....	.....	32.4	+ 5.3	53	40.3	15	24.4	25	5	.....	.....	8.57	+ 2.84	.....	sw.	.....	.....	...	7	13	11	14	...	...	...	...	...	...	...
New Haven	107	29.91	30.03	1.65	30.8	+ 3.8	51	37.5	10	24.0	22	5	23.2	77.6	6.77	+ 2.56	6,902	nw.	46	s.	22	8	10	13	15	6.3	5.2	19	37.5	1880	20.5	1888
New London	47	29.96	30.01	1.64	31.8	+ 2.3	51	38.9	13	24.6	24	5	24.6	76.7	6.36	+ 2.02	5,750	nw.	54	se.	22	6	13	12	17	6.6	5.3	20	37.7	1880	23.3	1888
Mid. Atlantic States.					36.7	+ 2.8									4.76	+ 1.08															
Albany	85	29.96	30.06	1.80	24.8	+ 0.6	48	32.1	— 2	17.6	32	6	18.6	77.6	6.12	+ 3.29	5,678	nw.	44	n.	12	2	9	30	19	8.0	6.9	18	31.0	1889	14.5	1875
New York City	185	29.83	30.04	1.49	34.7	+ 3.8	60	41.0	16	28.4	23	5	27.6	81.0	5.73	+ 1.84	9,292	nw.	44	s.	11	4	17	10	16	6.1	4.9	21	40.2	1890	25.3	1875
Harrisburg	377	29.62	30.09	1.26	32.2	.....	53	37.7	14	26.8	19	5	26.2	79.7	4.73	+ 1.06	6,022	w.	42	w.	30	5	15	11	13	6.5	5.6	3	38.0	1890	32.2	1891
Philadelphia	117	29.94	30.07	1.32	36.4	+ 3.9	56	43.2	17	29.7	20	7	26.6	73.6	3.65	+ 0.28	9,009	nw.	48	ne.	25	11	9	11	10	6.3	5.9	21	41.8	1890	25.8	1875
Atlantic City	53	30.01	30.06	1.28	35.3	+ 3.0	55	40.5	16	30.1	15	4	30.2	84.6	4.41	+ 0.61	10,135	nw.	54	nw.	25	11	12	8	11	4.7	2.2	18	42.1	1890	27.2	1875
New Brunswick	.....	.....	.....	.....	32.7	.....	56	39.8	13	25.6	23	3	.....	.....	6.03	.....	.....	nw.	.....	.....	...	5	12	14	10	...	...	...	...	...	...	...
Baltimore	76	30.00	30.09	1.28	37.6	+ 3.3	60	43.3	21	31.9	23	2	27.0	70.4	4.89	+ 1.69	3,740	nw.	28	sw.	25	15	8	8	13	4.8	3.7	21	44.0	1890	29.1	*
Washington City	112	29.97	30.10	1.30	37.4	+ 4.8	60	44.2	21	30.5	26	2	27.4	74.6	6.14	+ 2.78	5,658	nw.	42	nw.	25	10	11	13	13	5.8	4.8	21	43.8	1890	27.6	1881
Cape Henry	.....	.....	.....	.....	42.2	+ 2.5	66	48.8	27	35.7	25	4	.....	.....	3.03	— 1.59	.....	nw.	.....	.....	...	14	6	11	11	...	...	17	51.8	1890	34.5	1886
Lynchburgh	685	29.37	30.14	1.16	38.5	+ 1.6	64	45.9	19	31.1	30	3	28.0	73.0	6.04	+ 1.86	3,519	w.	24	w.	22	14	6	11	13	3.8	3.3	20	47.2	1890	31.3	1886
Norfolk	43	30.06	30.10	1.18	43.0	+ 2.5	67	50.2	25	35.8	25	5	36.3	82.2	2.86	— 1.02	6,669	n.	44	nw.	25	15	8	8	11	4.4	3.5	21	51.2	1890	34.3	1886
S. Atlantic States.					47.7	+ 0.5									3.46	— 1.03															
Charlotte	808	29.25	30.12	0.93	43.1	+ 1.9	69	51.5	24	34.7	31	3	32.2	74.6	3.92	— 1.44	3,936	sw.	30	sw.	11	16	2	13	12	3.6	4.4	13	50.8	1890	35.3	1886
Hatteras	11	30.12	30.14	0.99	47.2	+ 1.6	67	52.5	32	41.8	22	4	42.4	86.0	6.05	— 0.15	10,765	n.	52	w.	25	12	10	9	10	4.5	4.1	11	55.7	1890	39.7	1881
Kitty Hawk	.....	.....	.....	.....	46.8	.....	68	54.7	26	38.8	30	10	.....	.....	3.50	— 2.27	.....	sw.	...	.....	...	7	3	10	...	...	...	...	...	...	...	...
Raleigh	388	29.70	30.13	1.10	42.5	+ 2.0	68	51.3	22	33.7	31	2	31.4	70.0	3.96	.....	4,767	w.	30	sw.	2	13	3	15	12	4.7	5.1	5	51.6	1890	38.5	1887
Southport	.....	.....	.....	.....	46.6	+ 1.0	64	53.6	28	39.5	22	6	.....	.....	5.38	+ 1.72	6,424	sw.	54	sw.	22	14	7	10	9	...	...	...	...	...	...	...
Wilmington	78	30.06	30.15	0.98	47.6	+ 0.3	75	56.2	26	39.1	23	6	40.4	84.4	4.46	+ 0.54	6,249	nw.	43	sw.	22	13	8	10	7	4.0	4.0	21	57.2	1890	42.4	1886
Charleston	52	30.09	30.14	0.89	50.5	+ 0.6	72	58.0	32	43.0	23	6	45.1	90.0	2.33	— 1.74	5,848	w.	36	sw.	22	13	9	9	9	3.9	2.8	21	59.3	1890	38.2	1871
Columbia	.....	.....	.....	.....	45.0	.....	75	55.0	25	35.0	29	12	.....	.....	3.21	.....	.....	sw.	.....	.....	...	19	5	7	11	...	...	4	54.8	1890	45.0	1891
Augusta	183	29.97	30.17	0.77	46.8	— 0.6	76	56.4	26	37.2	34	4	36.2	76.6	3.29	— 1.20	2,868	w.	23	sw.	24	14	5	12	12	4.0	4.4	20	56.5	1880	40.2	1886
Savannah	87	30.07	30.17	0.81	50.4	— 1.2	77	59.3	30	41.6	27	7	39.2	74.1	1.00	— 2.51	5,629	nw.	30	w.	24	14	10	7	6	4.0	2.5	21	59.8	1890	45.5	1872
Jacksonville	43	30.12	30.18	0.57	54.2	— 1.1	80	64.0	30	44.5	28	8	42.8	74.6	1.19	— 2.26	4,822	nw.	40	w.	24	10	14	7	6	5.2	2.6	20	63.4	1890	49.8	1887
Florida Peninsula.															3.08	— 0.21															
Jupiter	28	30.14	30.16	0.41	62.6	.....	79	70.5	38	54.8	25	5	56.8	83.9	2.78	.....	7,538	nw.	25	s.	22	16	9	6	8	4.6	3.4	4	72.2	1890	62.6	1891
Key West	22	30.15	30.17	0.35	66.4	— 4.0	79	70.5	53	62.3	19	3	59.4	79.5	2.22	+ 0.12	8,446	ne.	32	nw.	13	11	12	8	4	5.5	3.2	21	74.9	1875	63.8	1886
Micco c	.....	.....	.....	.....	58.2	.....	78	67.4	33	49.0	32	8	.....	.....	2.90	.....	.....	n.	.....	.....	...	15	6	7	5	...	...	...	...	...	...	...
Tampa	36	30.15	30.19	0.42	57.5	.....	82	67.4	33	47.6	32	9	49.1	82.4	1.95	— 0.54	4,131	nw.	24	s.	24	13	13	5	7	4.7	2.2	...	...	...	...	...
Titusville	44	30.15	30.19	0.48	56.9	.....	76	65.0	34	48.8	29	7	50.0	86.8	0.96	.....	7,506	nw.	36	w.	24	18	8	5	7	3.1	2.5	4	66.4	1890	56.9	1891
Eastern Gulf States.					43.3	— 0.7									5.59	+ 0.26															
Atlanta	1,139	28.92	30.15	0.82	42.4	— 0.4	72	49.8	25	35.1	30	3	33.4	77.0	6.73	+ 0.44	7,593	nw.	30	nw.	24	9	6	16	16	5.0	5.0	13	54.1	1880	35.7	1884
Pensacola	56	30.08	30.14	0.70	50.7	— 2.2	67	57.6	30	43.8	27	5	45.6	87.4	4.18	— 0.71	7,451	nw.	50	sw.	21	13	6	12	10	3.9	3.3	12	62.8	1890	46.3	1886
Auburn	.....	.....	.....	.....	46.2	.....	71	53.9	26	38.4	33	6	.....	.....	4.98	.....	.....	nw.	.....	.....	...	13	8	10	8	...	...	...	...	...	...	...
Mobile	35	30.11	30.15	0.72	49.2	— 1.7	68	56.7	30	41.6	27	3	44.1	90.4	6.50	+ 1.55	5,829	n.	35	sw.	1	5	12	14	13	5.8	3.8	21	62.0	1890	43.5	1884
Montgomery	217	29.91	30.15	0.78	47.1	— 1.1	76	56.1	28	38.1	33	5	37.5	76.6	3.57	— 1.42	4,109	w.	24	nw.	24	8	8	15	13	6.7	4.4	19	57.6	1880	40.5	1884
Meridian	358	29.76	30.16	0.80	45.8	.....	75	54.2	25	37.3	31	2	36.7	80.8	9.18	.....	3,915	nw.	34	s.	1	9	13	9	15	6.2	4.5	...	...	...	...	...
Vicksburg	222	29.88	30.13	0.89	47.2	+ 1.9	73	54.8	28	39.7	28	2	38.9	79.8	8.79	+ 3.32	4,864	e.	40	sw.	1	11	6	14	15	5.1	5.6	20	59.8	1880	38.0	1886
University	.....	.....	.....	.....	42.5	.....	69	50.8	24	34.2	30	5	6.53	.....	.....	.....	.....	nw.	.....	.....	...	3	20	8	17	...	...	4	52.2	1890	39.5	1888
New Orleans	54	30.08	30.14	0.77	53.2	— 0.6	77	59.9	32	46.6	21	4	44.7	80.8	3.75	— 1.65	6,923	se.	35	nw.	24	11	8	12	11	5.5	5.3	21	65.1	1890	45.5	1886
Port Eads	.....	.....	.....	.....	53.4	.....	72	63.2	32	43.7	28	9	.....	.....	7.96	.....	.....	ne.	.....	.....	...	2	17	12	7	...	...	...	...	...	...	...
Western Gulf States.					47.6	+ 1.7									6.12	+ 2.38															
Shreveport	249	29.86	30.12	0.88	45.3	+ 1.3	64	52.3	29	38.3	30	3	37.7	79.4	5.10	— 0.15	5,279	se.	40	n.	8	10	5	16	17	6.3	5.2	20	60.4	1880	38.1	1886
Fort Smith	492	29.62	30.16	0.89	40.4	+ 4.0	64	49.1	22	31.6	34	4	31.4	74.9	3.69	+ 1.32	4,998	e.	40	w.	1	14	6	11	9	5.6	4.8	9	46.4	1890	27.1	1886
Little Rock	309	29.80	30.13	1.07	42.0	+ 1.7	63	48.7	26	35.4	30	2	36.7	85.4	7.68	+ 2.67	4,476	w.	34	sw.	1	9	7	15	11	6.0	5.0	12	55.7	1880	29.1	1886
Corpus Christi	20	30.11	30.13	0.80	55.6	+ 2.1	75	61.9	33	49.2	21	5	49.8	81.6	2.85	— 1.06	8,407	n.	42	ne.	10	7	10	14	10	5.0	3.7	4	64.0	1890	48.3	1888
Galveston	44	30.10	30.14	0.74	52.6	+ 0.3	66	57.1	34	48.2	16	3	49.9	89.2	6.79	+ 2.81	7,786	nw.	42	ne.	10	11	5	15	12	3.9	4.5	20	64.6	1880	46.7	1884
Palestine	511	29.57	30.14	0.67	46.1	+ 2.8	69	53.3	26	38.9	28	3	34.8	70.2	11.11	+ 6.72	4,780	ne.	26	se.	8	10	7	14	15	5.9	5.0	9	55.6	1890	39.3	1886
San Antonio	781	29.33	30.17	0.73	50.9	— 0.6	73	60.9	25	40.9	35	8	36.5	66.6	5.63	+ 4.05	6,316	n.	34	nw.	21	14	6	11	11	4.5	3.9	12	61.2	1880	43.4	1881
Rio Grande Valley.					61.2	+ 4.6									2.17	+ 0.64															
Brownsville	57	30.04	30.10	0.81	62.9	+ 5.7	85	72.9	36	52.9	33	10	52.3	79.2	1.65	— 0.30	5,936	n.	38	sw.	14	12	11	8	10	5.4	3.6	14	70.8	1880	50.8	1881
Rio Grande City	230	29.92	30.17	0.88	59.4	+ 3.6	88	70.2	31	48.6	43	1	46.4	72.6	2.69	+ 1.58	5,566	nw.	40	nw.	23	4	19	8	6	6.6	4.5	12	68.5	1880	50.1	1881
Ohio Val. & Tenn.					38.1	+ 4.4									4.40	— 0.06															
Chattanooga	783	29.30	30.15	0.95	42.4	+ 1.2	69	50.4	26	34.5	27	5	33.1	78.1	6.31	— 0.79	4,596	ne.	30	sw.	11	5	11	15	15	6.8	5.4	13	51.7	1880	33.2	1886
Knoxville	980	29.09	30.16	0.99	39.8	+ 1.7	71	46.4	22	33.1	26	2	31.6	78.2	4.36	— 1.43	4,609	sw.	36	sw.	11	7	10	14	14	6.9	5.8	21	49.5	1880	29.8	1884
Memphis	330	29.79	30.16	1.05	42.2	+ 4.8	64	48.4	28	36.1	26	2	37.0	86.8	7.33	+ 1.51	5,296	w.	35	sw.	1	8	6	17	13	6.6	5.7	20	54.3	1880	29.6	1886
Nashville	553	29.54	30.14	1.00	40.5	+ 3.6	71	47.3	25	33.7	29	4	33.4	80.5	6.15	+ 0.79	4,270	ne.	26	s.	1	6	7	18	13	7.6	5.8	21	52.5	1880	29.0	1886
Lexington	.....	.....	.....	.....	37.1	.....	62	42.7	*20	31.5	23	2	30.0	81.4	4.70	.....	10,434	sw.	60	sw.	1	11	6	14	13	7.7	6.2	4	44.0	1890	31.2	1888
Louisville	551	29.50	30.11	1.22	39.2	+ 6.6	62	45.9	24	32.6	23	3	28.1	71.0	5.21	+ 1.00	6,011	sw.	29	sw.	2	7	11	13	12	6.3	5.9	20	50.1	1880	26.4	1875
Indianapolis	766	29.24	30.08	1.30	34.2	+ 7.2	58	39.4	14	29.0	24	4	26.9	79.2	2.00	— 1.19	4,936	w.	24	nw.	2	8	3	20	11	6.9	6.3	20	45.9	1880	20.0	1875
Cincinnati	628	29.42	30.11	1.32	36.2	+ 4.0	62	42.2	18	30.2	25	6	28.7	76.8	3.31	— 0.17	5,667	s.	27	s.	2	7	7	17	12	7.9	5.9	21	48.6	1880	25.4	1886
Columbus	837	29.17	30.11	1.34	33.0	+ 5.0	57	37.8	17	28.1	21	3	26.8	80.5	2.84	— 0.65	5,109	s.	34	sw.	2	3	7	21	12	8.0	8.1	13	43.8	1880	20.5	1884
Pittsburgh	847	29.14	30.09	1.36	35.0	+ 5.2	57	40.0	18	29.9	21	4	30.0	82.2	2.43	— 0.80	4,439	w.	28	w.	2	2	5	24	17	8.3	8.1	20	44.1	1880	22.4	1875
Parkersburgh	638	29.40	30.12	1.28	35.5	.....	60	41.2	19	29.8	29	3	30.0	84.0	4.10	+ 0.98	4,556	sw.	28	s.	1	6	4	21	19	8.8	6.6	3	42.4	1890	35.5	1891
Lower Lake Region.					29.0	+ 4.2									2.19	— 0.54															
Buffalo	690	29.27	30.03	1.33	27.8	+ 4.2	50	33.6	8	22.0	31	3	23.2	82.6	2.25	— 0.66	9,178	sw.	59	sw.	13	2	7	22	19	8.2	7.9	21	36.8	1880	17.6	1875
Oswego	335	29.65	30.03	1.40	24.9	+ 2.0	46	30.8	1	19.0	27	4	21.0	85.4	3.01	— 0.05	8,738	se.	38	nw.	14	2	4	25	15	9.1	8.1	21	36.2	1880	15.4	1888
Rochester	622	29.35	30.04	1.36	27.1	+ 3.7	47	32.4	8	21.8	28	3	21.8	81.6	3.75	+ 0.54	6,254	nw.	34	nw.	22	2	5	24	17	9.0	8.2	21	36.5	1880	17.2	1888
Erie	714	29.25	30.03	1.33	30.7	+ 4.4	52	37.0	14	24.4	21	4	24.5	83.4	2.32	— 1.20	7,403	sw.	37	s.	31	1	7	23	18	8.8	7.6	18	39.7	1880	20.3	1875
Cleveland	751	29.24	30.09	1.41	31.3	+ 5.8	54	35.9	18	26.7	23	3	25.6	81.0	2.19	— 0.42	5,883	sw.	30	sw.	13	3	3	25	14	8.1	8.0	21	39.5	1880	17.3	1875
Sandusky	629	29.37	30.07	1.44	30.6	+ 4.9	56	36.2	14	25.0	22	4	25.6	82.9	2.00	— 0.27	5,979	w.	33	w.	29	0	4	27	14	9.5	7.3	14	41.0	1880	20.8	1884
Toledo	674	29.34	30.09	1.44	30.4	+ 5.3	54	36.1	12	24.8	19	4	24.0	81.2	1.08	— 1.14	5,630	nw.	32	w.	29	3	8	20	12	8.5	6.6	21	40.6	1880	17.1	1875
Detroit	724	29.25	30.07	1.48	28.8	+ 3.7	50	33.4	14	24.2	18	2	23.8	84.2	0.92	— 1.12	6,565	sw.	33	s.	13	0	8	23	8	7.8	7.1	21	37.0	1880	14.9	1875
Upper Lake Region.					25.6	+ 7.5									2.05	+ 0.04															
Alpena	609	29.35	30.04	1.35	22.9	+ 6.7	38	27.7	— 1	18.1	23	1	18.5	86.0	2.26	— 0.33	5,748	w.	28	w.	12	1	6	24	18	8.8	6.7	19	29.6	1880	9.5	1875
Escanaba	608	.....	.....	.....	21.5	.....	45	29.8	— 6	13.2	28	6	.....	.....	1.43	.....	.....	n.	.....	.....	...	11	6	14	10	...	...	20	25.9	1880	4.1	1875
Grand Haven	621	29.34	30.05	1.51	28.2	+ 4.6	45	33.9	8	22.6	25	3	22.6	82.4	2.13	— 0.21	7,822	w.	45	sw.	13	5	4	22	13	8.6	7.0	20	37.1	1880	17.0	1888
Lansing	883	29.10	30.09	1.51	26.8	.....	51	32.5	7	21.2	26	4	22.0	85.8	1.33	— 0.64	4,358	sw.	24	sw.	29	3	7	21	13	8.7	6.7	5	31.2	1890	15.7	1888
Manistee	615	29.35	30.05	1.34	26.4	.....	41	31.6	6	21.1	24	2	20.8	80.8	2.32	.....	4,805	e.	28	w.	13	5	5	21	16	7.9	6.4	3	27.3	1890	20.4	1891
Marquette	735	29.21	30.03	1.25	22.0	+ 7.7	40	27.9	— 5	16.0	26	3	15.2	76.0	4.08	+ 2.40	5,112	nw.	38	sw.	18	3	11	17	22	7.4	6.8	20	28.4	1880	6.9	1875
Port Huron	639	29.35	30.07	1.46	27.5	+ 6.4	49	32.1	10	22.9	21	3	22.4	82.4	1.81	— 0.31	8,224	nw.	34	nw.	2	2	3	26	14	8.4	8.3	17	34.9	1880	13.3	1875
Sault de Ste. Marie	642	29.31	30.05	1.25	16.4	.....	36	23.3	—15	9.6	26	3	14.0	92.4	2.06	+ 0.27	4,484	se.	26	n.	12	3	4	24	19	8.5	6.9	3	20.4	1889	10.4	1891
Chicago	824	29.16	30.08	1.46	30.2	+ 6.1	54	35.0	10	25.4	21	4	24.4	82.0	1.99	— 0.21	11,142	sw.	54	ne.	2	3	9	19	11	7.2	6.4	21	40.1	1880	15.1	1888
Milwaukee	699	29.28	30.05	1.38	27.8	+ 9.2	40	32.5	9	23.2	21	4	22.0	80.5	2.10	— 0.13	7,913	w.	50	n.	1	6	9	16	12	7.2	5.2	21	34.6	1880	9.7	1875
Green Bay	616	29.38	30.08	1.22	22.6	.....	39	29.2	0	1.60	27	4	17.8	86.0	2.30	.....	4,807	s.	42	n.	1	8	8	15	12	7.0	5.4	5	22.6	1891	5.5	1888
Duluth	672	29.30	30.07	1.20	20.5	+11.9	46	27.6	— 9	13.4	31	4	13.3	74.8	0.67	— 0.45	4,291	nw.	25	nw.	1	8	10	13	12	6.3	5.6	21	22.1	1880	— 0.5	1885

Table of miscellaneous meteorological data for January, 1891—*Signal Service observations*—Continued.

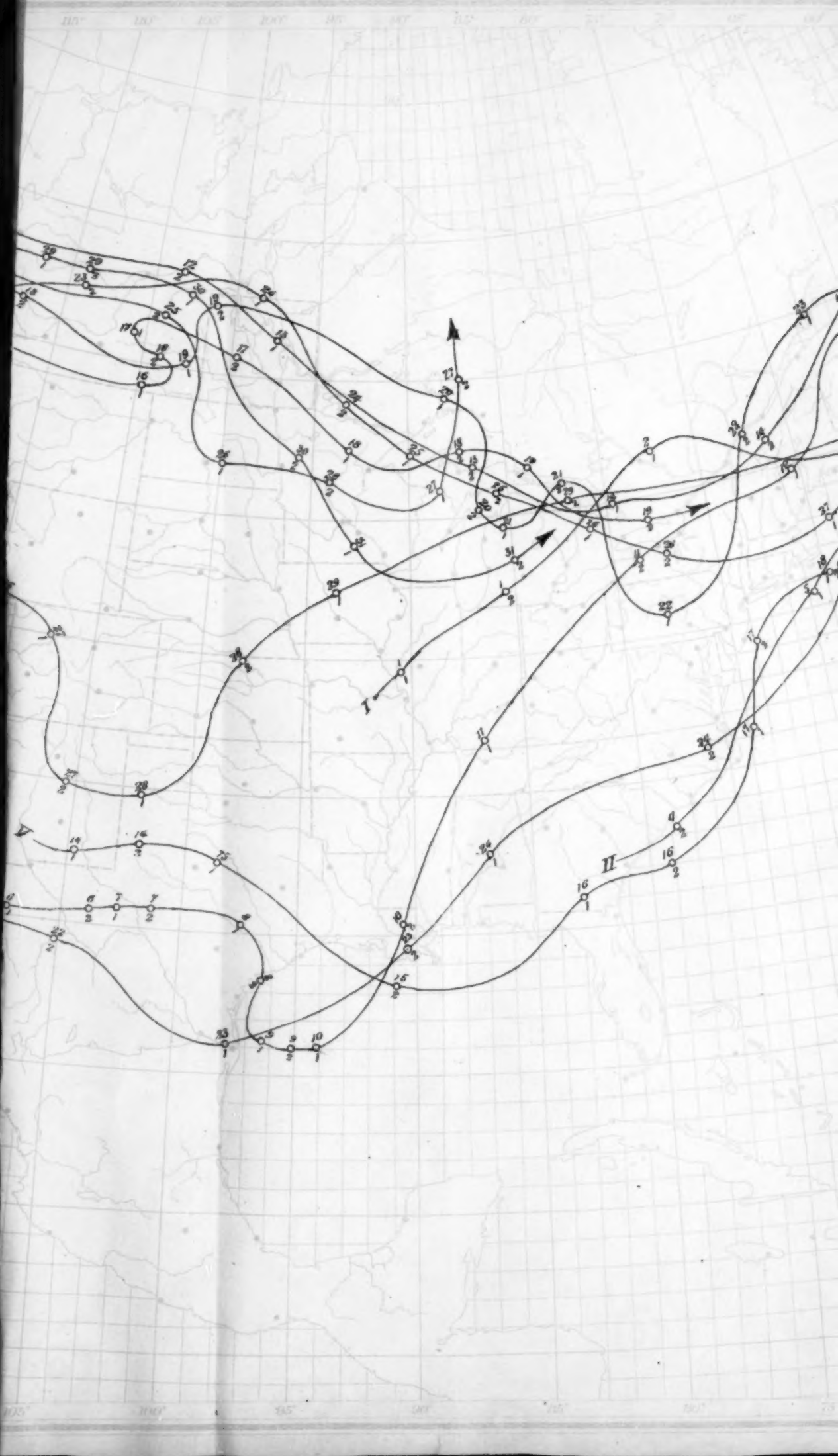
Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches. Mean actual.	Mean reduced.	Monthly range.	Temperature of air, in degrees Fahrenheit. Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal precipitation.	Wind. Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Direction.	Date.	Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths. 8 a. m.	8 p. m.	Mean temperature data since opening of station. Length of record, years.	Highest for month.	Year.	Lowest for month.	Year.
Extreme Northwest.					**19.2**	**+ 20.3**									**0.40**	**— 0.23**																
Moorhead	935	29.03	30.12	1.09	14.1	+15.6	42	23.2	—17	5.0	41	7	10.0	86.0	0.91	+0.15	7,616	s.	38	s	16	12	6	13	8	4.0	4.5	11	14.1	1891	—9.7	1883
Saint Vincent	804	29.18	30.11	1.13	11.0	+20.6	41	20.3	—27	1.7	38	7	.....	.....	0.78	+0.34	7,375	n.	36	ne.	20	6	10	15	8	6.1	6.9	11	11.0	1891	—13.5	1888
Bismarck	1,681	28.23	30.10	0.92	23.8	+20.5	50	34.4	— 9	13.2	46	8	19.0	89.7	0.05	—0.56	7,593	nw.	48	nw.	13	18	8	5	3	3.8	4.1	17	23.8	1891	— 9.0	1875
Fort Buford	1,900	27.97	30.08	0.94	21.2	+19.6	50	32.7	—11	9.6	43	7	15.4	78.8	0.19	— 0.38	6,676	nw.	38	nw.	30	6	16	9	4	4.0	5.7	13	21.2	1891	— 5.6	1888
Fort Yates	.....	.....	.....	.....	26.0	+25.3	52	37.1	— 6	15.0	44	10	.....	.....	0.07	— 0.70	.....	nw.	.....	.....	...	9	13	9	5	.....	.....	...	.....	.....	.....	.....
Upper Miss. Valley.					**23.8**	**+ 9.3**									**1.96**	**— 0.01**																
Minneapolis	.....	.....	.....	.....	24.2	.....	49	33.9	— 1	14.6	46	8	.....	.....	0.97	.....	.....	nw.	.....	.....	...	8	12	11	7	.....	.....	...	.....	.....	.....	.....
Red Wing	758	29.24	30.11	1.13	21.6	.....	46	29.7	0	13.4	40	5	15.2	76.8	2.06	.....	5,255	w.	50	w.	13	7	11	13	6	5.5	5.4	1	.....	.....	.....	.....
Saint Paul	831	29.14	30.08	1.14	21.2	+11.2	46	28.5	— 2	14.0	39	3	15.8	80.4	1.01	+ 0.02	4,676	nw.	30	nw.	13	8	12	11	6	5.6	5.2	21	26.2	1880	— 0.9	1888
La Crosse	736	29.26	30.11	1.13	24.6	+11.1	44	32.7	4	16.6	36	6	17.9	81.4	2.10	+ 0.82	3,952	s.	26	n.	1	9	9	13	8	5.6	4.3	19	31.2	1880	2.6	1888
Davenport	613	29.42	30.12	1.35	27.8	+ 8.7	44	33.8	3	21.9	33	4	22.6	82.2	2.38	+ 0.67	5,698	sw.	30	nw.	14	12	3	16	11	4.3	6.1	20	37.6	1880	9.4	1875
Des Moines	869	29.14	30.09	1.22	28.3	+11.6	47	36.6	6	20.0	39	7	21.4	81.6	1.82	+ 0.45	6,252	nw.	29	nw.	12	17	5	9	5	3.6	3.6	13	36.2	1880	6.9	1888
Dubuque	651	29.36	30.10	1.27	26.8	+10.3	46	33.7	4	19.8	34	4	20.6	82.2	1.27	— 0.44	3,260	nw.	26	nw.	1	11	8	12	6	5.2	5.4	18	34.2	1880	6.6	1875
Keokuk	613	29.44	30.13	1.38	31.6	+10.0	55	39.1	6	24.2	31	4	24.0	77.6	2.59	+ 0.90	4,217	sw.	30	nw.	29	15	6	10	9	3.9	4.6	20	41.3	1880	13.6	1888
Cairo	359	29.74	30.13	1.15	38.5	+ 5.5	60	44.4	20	32.6	26	2	31.0	80.2	3.95	— 0.17	5,642	n.	44	w.	1	9	9	13	13	6.5	5.3	20	51.3	1880	25.4	1886
Springfield, Ill.	644	29.38	30.08	1.35	32.4	+ 6.8	54	39.7	1	25.0	38	6	24.6	79.1	1.16	— 1.24	6,278	nw.	36	w.	29	8	11	12	8	6.5	4.8	12	43.7	1880	17.5	1888
Saint Louis	571	29.48	30.11	1.27	36.6	+ 7.9	59	42.8	15	30.5	31	5	29.8	79.8	1.35	— 1.10	7,855	sw.	48	sw.	29	13	5	13	9	5.4	4.5	21	45.7	1880	21.7	1881
Missouri Valley.					**30.0**	**+13.0**									**1.35**	**+ 0.41**																
Columbia	.....	.....	.....	.....	35.8	.....	62	45.4	13	26.1	32	6	.....	.....	0.97	.....	5,109	nw.	36	s.	1	9	10	12	12	...	4.4	...	.....	.....	.....	.....
Kansas City	963	29.06	30.14	1.08	34.0	+ 8.2	59	41.0	16	26.9	25	3	24.5	74.4	2.20	+ 1.02	6,080	sw.	32	nw.	1	10	10	11	8	4.9	4.6	3	34.0	1891	30.2	1890
Springfield, Mo.	1,356	28.64	30.13	1.06	36.2	+ 6.3	61	43.4	14	28.9	28	4	28.0	79.8	2.10	— 0.16	5,442	nw.	36	nw.	1	8	10	13	10	4.7	4.9	6	39.4	1890	27.5	1888
Leavenworth	842	29.22	30.13	1.07	33.2	+ 9.1	58	40.7	12	25.7	28	2	25.6	81.4	2.66	+ 1.36	4,378	nw.	30	nw.	1	10	5	16	9	5.8	4.9	20	41.4	1880	15.1	1875
Topeka	.....	.....	.....	.....	31.4	.....	58	40.4	4	22.4	33	5	.....	.....	2.58	.....	.....	n.	.....	.....	...	9	11	11	10	.....	.....	4	31.4	1891	17.5	1888
Omaha	1,113	28.91	30.14	0.90	29.6	+12.4	56	38.0	8	21.1	39	3	20.8	76.0	2.11	+ 1.43	5,455	nw.	30	nw.	1	10	8	13	7	4.5	3.2	21	34.5	1880	7.3	1886
Crete	.....	.....	.....	.....	29.4	.....	58	40.2	5	18.5	39	6	.....	.....	1.96	.....	.....	s.	.....	.....	...	11	6	14	4	.....	.....	4	29.4	1891	9.5	1888
Valentine	2,613	27.32	30.17	0.74	28.0	+13.6	54	37.9	0	18.2	43	4	19.4	77.6	0.61	+ 0.07	8,012	nw.	36	nw.	22	15	9	7	9	5.0	2.9	6	28.0	1891	7.1	1886
Sioux City	1,158	28.83	30.14	0.82	27.5	.....	58	37.4	3	17.6	45	5	19.0	77.8	1.66	.....	5,697	nw.	37	nw.	1	9	13	9	8	5.2	3.1	...	.....	.....	.....	.....
Fort Sully	1,600	28.35	30.11	0.84	27.9	+19.9	53	37.3	— 2	18.5	49	7	18.6	75.2	0.28	— 0.25	7,152	nw.	46	nw.	1	12	9	10	4	4.4	4.4	11	27.9	1891	0.1	1875
Huron	1,307	28.66	30.11	0.85	24.1	+19.1	55	35.3	— 8	12.9	53	3	14.4	73.0	0.07	— 0.38	7,820	n.	36	n.	1	14	7	10	4	5.5	3.8	10	24.1	1891	— 1.4	1888
Yankton	1,232	28.73	30.12	0.78	27.1	+15.2	57	37.4	1	16.8	46	4	18.2	76.7	0.78	+ 0.22	6,900	nw.	45	nw.	1	12	11	8	7	5.9	3.1	18	28.9	1880	0.5	1875
Northern Slope.					**27.2**	**+13.1**									**0.72**	**+ 0.09**																
Ft. Assiniboine	2,690	27.18	30.08	0.80	26.6	+23.9	54	37.4	—11	15.9	42	11	16.4	68.9	0.06	— 0.92	9,866	sw.	44	sw.	12	8	13	10	5	3.9	4.9	11	26.6	1891	— 5.1	1890
Fort Custer	3,040	26.87	30.12	0.73	28.6	+17.9	55	37.8	— 1	19.3	34	5	20.9	79.8	0.20	— 0.66	4,813	sw.	34	sw.	13	9	14	8	3	4.5	4.9	11	28.6	1891	2.2	1886
Helena	4,069	25.90	30.18	0.71	27.5	+12.2	50	33.8	— 7	21.2	24	6	15.2	61.6	0.31	— 1.05	4,368	sw.	48	sw.	3	9	8	14	6	5.3	6.8	11	27.5	1891	5.3	1888
Rapid City	3,280	26.64	30.13	0.71	31.8	.....	59	41.8	2	21.8	37	4	17.2	62.8	0.27	— 0.07	6,316	w.	36	nw.	13	13	11	7	4	4.3	4.6	4	31.8	1891	10.7	1888
Cheyenne	6,105	23.95	30.13	0.61	25.6	+ 1.8	49	34.9	— 3	16.4	38	3	10.9	59.7	2.03	+ 1.77	8,698	nw.	35	w.	26	10	13	8	8	3.4	5.3	21	31.3	1871	13.2	1875
Fort McKinney	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	4	24.6	1889	13.9	1888
Fort Washakie	5,580	24.47	30.20	0.64	20.4	.....	46	32.1	— 9	8.6	34	6	10.0	70.1	1.91	+ 1.39	2,933	sw.	26	w.	25	14	13	4	5	3.9	4.6	5	20.4	1891	6.7	1888
North Platte	2,841	27.13	30.18	0.60	27.5	+ 9.6	56	39.2	0	15.8	44	6	15.2	71.0	0.65	+ 0.17	7,097	w.	40	nw.	1	13	13	5	6	4.5	3.7	17	32.1	1880	7.7	1875
Middle Slope.					**27.4**	**+ 2.4**									**1.89**	**+ 1.05**																
Denver	5,281	24.76	30.20	0.61	25.4	— 1.3	49	37.3	— 7	13.4	33	5	9.0	56.0	1.60	+ 1.02	4,414	sw.	26	n.	4	11	13	7	6	4.0	5.1	20	35.9	1880	16.8	1875
Pueblo	4,753	25.26	30.28	0.64	23.8	— 4.5	50	36.9	—13	10.6	43	5	11.8	68.6	1.30	+ 0.96	4,381	w.	36	n.	1	11	17	3	4	3.5	4.6	3	31.2	1890	23.8	1891
Concordia	1,410	28.61	30.18	0.76	31.6	+10.2	57	40.9	6	22.3	32	5	21.8	79.0	2.15	+ 1.14	5,784	n.	38	nw.	1	14	8	9	11	3.7	3.1	6	31.6	1891	10.5	1886
Dodge City	2,523	27.44	30.20	0.63	28.8	+ 5.2	55	38.2	0	19.5	34	2	20.6	82.1	0.98	+ 0.52	7,690	nw.	48	n.	1	12	12	7	6	3.4	4.5	17	38.1	1880	13.2	1875
Wichita	1,366	28.64	30.16	0.77	33.6	.....	58	41.2	11	25.9	28	2	26.5	82.4	2.66	.....	6,633	n.	47	n.	1	13	6	12	8	5.4	4.5	3	33.6	1891	29.9	1890
Fort Reno	.....	.....	.....	.....	37.8	.....	65	47.4	14	28.1	38	4	.....	.....	1.90	+ 1.59	.....	s.	.....	.....	...	15	1	15	7	.....	.....	...	.....	.....	.....	.....
Oklahoma City	1,239	28.81	30.18	0.68	37.8	.....	62	46.2	10	29.5	31	3	28.0	76.6	2.48	.....	5,513	nw.	36	n.	1	9	11	11	13	4.9	5.1	...	.....	.....	.....	.....
Southern Slope.					**40.4**	**+ 4.0**									**1.94**	**+ 1.06**																
Fort Sill ‡	1,200	28.87	30.16	0.69	38.8	+ 6.3	63	47.5	12	30.2	33	1	30.0	79.8	2.72	+ 1.66	4,672	n.	36	s.	27	14	8	9	11	4.5	3.7	14	48.1	1880	27.2	1886
Abilene	1,748	28.29	30.16	0.71	42.1	+ 1.6	66	50.2	15	34.0	33	2	32.2	76.8	2.11	+ 1.18	6,552	s.	44	w.	1	12	11	8	11	4.2	3.7	6	49.8	1890	34.9	1886
Fort Stanton	6,150	23.94	30.03	0.62	28.1	.....	54	40.1	— 6	16.1	40	2	18.4	69.1	1.00	+ 0.33	3,729	nw.	36	sw.	27	15	11	5	7	3.4	3.6	6	38.4	1890	28.1	1891
Southern Plateau.					**38.8**	**— 3.9**									**0.71**	**— 0.11**																
El Paso	3,796	26.25	30.11	0.66	39.9	— 3.6	63	51.7	16	28.1	39	2	25.2	61.1	0.27	— 0.27	5,799	nw.	48	w.	27	18	7	6	2	2.8	3.4	13	53.2	1879	39.9	*
Carthage	.....	.....	.....	.....	32.5	.....	58	45.9	7	19.1	39	17	.....	.....	0.39	.....	.....	n.	.....	.....	...	18	7	6	6	.....	.....	...	.....	.....	.....	.....
Santa Fé	7,026	23.23	30.21	0.58	22.7	— 5.1	42	32.6	— 1	12.8	27	9	11.2	68.8	1.32	+ 0.82	4,514	ne.	28	ne.	14	19	4	8	9	2.7	3.5	19	32.2	1890	22.1	1878
Fort Apache	.....	.....	.....	.....	33.4	— 1.9	60	48.5	6	18.2	42	11	.....	.....	1.73	+ 0.31	.....	sw.	.....	.....	...	21	5	5	4	.....	.....	13	38.4	1890	31.9	1883
Fort Bowie	.....	.....	.....	.....	37.8	— 4.4	56	46.0	18	29.6	20	8	.....	.....	0.79	— 1.04	.....	ne.	.....	.....	...	25	2	4	3	.....	.....	...	.....	.....	.....	.....
Fort Grant	4,860	25.21	30.13	0.46	39.6	— 2.9	60	49.2	20	30.1	30	8	26.2	65.0	0.82	— 0.10	4,502	w.	36	e.	19	22	6	3	3	1.1	2.2	13	46.7	1887	39.6	1891
Fort Thomas	.....	.....	.....	.....	39.0	— 2.4	64	54.2	14	23.8	44	14	.....	.....	0.72	+ 0.10	.....	nw.	.....	.....	...	16	8	7	3	.....	.....	11	44.6	1888	37.8	1881
Holbrook	.....	.....	.....	.....	32.8	.....	52	44.8	13	20.8	37	15	.....	.....	0.05	.....	.....	sw.	.....	.....	...	20	1	10	1	.....	.....	...	.....	.....	.....	...
San Carlos	.....	.....	.....	.....	40.3	— 9.1	64	52.6	21	28.0	38	14	.....	.....	0.96	— 0.08	.....	se.	.....	.....	...	24	4	3	4	.....	.....	...	.....	.....	.....	.....
Willcox	.....	.....	.....	.....	37.7	— 5.2	64	51.3	9	24.1	37	20	.....	.....	0.47	+ 0.17	.....	w.	.....	.....	...	16	1	14	3	.....	.....	...	.....	.....	.....	.....
Yuma	141	29.94	30.09	0.52	53.4	— 0.5	76	66.3	27	40.6	36	13	21.4	33.5	0.00	— 0.39	5,398	n.	34	n.	29	25	4	2	0	1.5	2.5	16	60.3	1877	50.2	1882
Keeler	3,622	26.42	30.14	0.55	41.3	.....	66	51.2	23	31.4	27	14	17.0	40.8	0.00	— 0.62	5,986	n.	43	nw.	27	19	8	4	0	1.4	3.0	6	43.1	1887	35.3	1888
Middle Plateau.					**24.9**	**— 2.8**									**0.04**	**— 0.44**																
Carson City	.....	.....	.....	.....	33.2	.....	54	44.8	8	21.6	30	9	.....	.....	0.10	.....	.....	.....	.....	.....	...	26	4	1	1	3.4	1.6	4	33.2	1891	21.0	1890
Winnemucca	4,340	25.81	30.35	0.72	26.6	— 3.4	47	37.4	— 3	15.7	31	8	18.8	73.6	0.23	— 0.92	5,954	ne.	46	w.	26	8	15	8	8	3.8	6.1	13	34.8	1887	14.7	1890
Fort Du Chesne	4,900	25.16	30.27	0.75	16.9	.....	37	28.8	—11	5.0	32	9	9.8	8.1	0.30	.....	1,800	n.	23	e.	8	14	6	11	2	4.5	4.7	4	16.9	1891	3.5	1888
Salt Lake City	4,348	25.78	30.30	0.72	28.8	+ 1.1	46	34.9	12	22.7	18	4	19.8	71.0	0.74	— 0.78	2,217	nw.	18	nw.	5	7	10	14	7	5.5	5.4	17	33.2	1887	21.4	1889
Taylor's Ranch	.....	.....	.....	.....	18.1	.....	35	28.9	— 5	7.3	33	12	.....	.....	0.42	.....	.....	nw.	.....	.....	...	22	6	3	3	.....	.....	...	.....	.....	.....	.....
Montrose	5,795	24.32	30.28	0.75	18.9	— 6.1	40	30.1	— 5	7.7	31	6	6.1	64.8	0.94	+ 0.35	3,426	s.	24	nw.	22	18	7	6	5	3.3	3.6	6	27.5	1887	18.9	1891
Northern Plateau.															**1.11**	**— 1.36**																
Baker City	3,430	26.64	30.32	0.83	24.4	.....	44	32.9	0	16.0	30	6	16.4	77.8	2.04	.....	3,237	s.	16	sw.	19	1	7	23	12	8.6	8.1	...	.....	.....	.....	.....
Spokane Falls	1,938	28.13	30.25	1.00	34.9	+13.9	50	39.8	16	30.0	16	4	28.9	82.0	1.04	— 1.74	2,450	sw.	24	sw.	16	1	4	26	12	7.4	8.4	10	34.9	1891	15.5	1888
Walla Walla	1,018	29.15	30.28	0.97	30.4	.....	64	45.6	19	33.2	29	3	33.4	81.8	1.18	— 0.99	3,676	sw.	24	sw.	3	4	11	16	12	7.0	7.1	6	41.0	1887	20.6	1890
N. Pac. Coast Region					**43.7**	**+ 4.3**									**7.54**	**— 3.16**																
Fort Canby	179	29.94	30.14	0.83	45.6	+ 4.7	58	49.6	33	41.7	17	3	44.0	93.1	6.55	— 2.51	11,216	se.	70	se.	15	4	7	20	20	6.4	6.7	8	45.6	1891	35.5	1888
Neah Bay	.....	.....	.....	.....	45.0	.....	58	50.1	32	39.9	19	5	.....	.....	15.93	— 1.36	.....	e.	.....	.....	...	6	6	19	19	...	...	8	45.0	1891	35.5	1888
Olympia	36	30.13	30.17	0.86	42.4	+ 4.6	60	46.5	24	38.3	17	5	40.0	91.8	5.15	— 3.38	2,715	s.	18	s.	2	0	10	21	18	8.1	7.9	14	42.4	1891	32.5	1888
Port Angeles	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	6	38.5	1887	31.4	1890
Tatoosh Island	.....	.....	.....	.....	44.8	+ 4.6	54	48.2	36	41.4	13	3	.....	.....	11.91	— 2.32	.....	e.	.....	.....	...	5	9	17	20	...	...	7	44.8	1891	36.4	1888
Astoria	.....	.....	.....	.....	45.1	.....	56	49.5	31	40.7	13	3	.....	.....	6.01	— 5.76	.....	e.	.....	.....	...	6	6	19	22	...	...	4	45.1	1891	34.7	1888
Portland	80	30.11	30.20	0.76	43.2	+ 5.4	61	48.8	25	37.5	21	4	38.4	84.8	3.62	— 3.88	4,046	s.	29	s.	2	8	9	14	16	6.3	6.7	20	44.6	1873	30.0	1888
Roseburgh	523	29.68	30.25	0.79	42.4	+ 2.1	61	47.9	26	36.8	23	3	38.4	86.5	3.59	— 3.05	1,581	*	24	w.	26	3	6	22	18	7.0	7.5	14	44.0	1878	35.1	1888
Mid. Pac. Coast Reg.					**49.2**	**+ 2.2**									**0.96**	**— 3.88**																
Eureka	64	30.16	30.22	0.67	48.0	.....	63	54.6	31	41.4	26	5	44.9	90.4	3.33	.....	3,707	*	36	n.	29	7	13	11	15	3.8	6.4	5	48.0	1891	42.2	1890
Red Bluff	342	29.86	30.22	0.59	48.4	+ 3.1	74	58.1	26	38.7	31	3	36.0	69.9	1.36	— 3.33	4,939	nw.	33	nw.	28	11	13	7	8	3.9	3.7	14	50.0	1881	39.2	1890
Sacramento	64	30.12	30.19	0.55	46.9	+ 1.2	66	56.6	28	37.2	28	8	37.4	71.6	0.53	— 3.36	4,410	n.	33	nw.	28	21	5	5	5	2.2	3.2	14	49.7	1878	41.9	1883
San Francisco	109	30.08	30.20	0.52	52.2	+ 2.2	72	59.2	39	45.3	24	5	43.0	76.0	0.98	— 4.00	3,331	n.	28	sw.	26	11	12	8	6	4.1	4.2	20	54.5	*	46.2	1890
Point Reyes Light	.....	.....	.....	.....	55.6	.....	68	56.9	40	44.2	25	6	.....	.....	1.76	.....	.....	nw.	.....	.....	...	13	10	8	6	.....	.....	...	.....	.....	.....	.....
S. Pac. Coast Region.					**53.2**	**+ 1.8**									**0.78**	**— 1.30**																
Fresno	338	29.82	30.19	0.52	45.4	.....	66	56.3	26	34.6	31	9	38.2	78.7	0.88	— 0.44	2,675	nw.	18	nw.	5	11	17	3	3	1.6	3.1	4	45.4	1891	42.2	1890
Los Angeles	330	29.74	30.10	0.46	55.8	+ 2.8	80	68.4	34	43.2	34	13	32.8	48.0	0.25	— 2.72	3,015	w.	19	nw.	7	18	11	2	1	1.7	2.0	14	55.8	1891	49.1	1890
San Diego	93	30.00	30.10	0.47	54.6	+ 0.9	76	65.2	35	44.0	31	13	38.6	58.4	1.21	— 0.75	3,263	w.	30	ne.	19	22	7	2	3	1.6	2.0	20	57.4	1877	50.4	1882

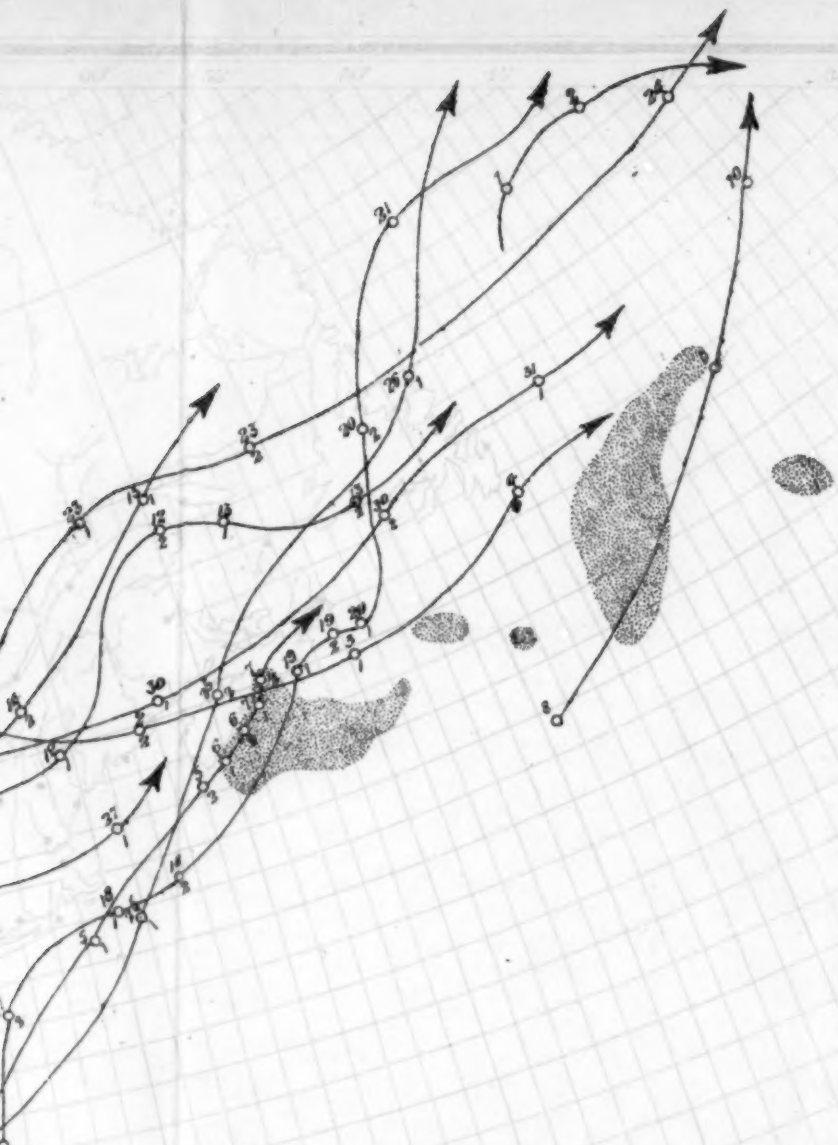
NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.
* Two or more directions, dates, or years. † Precipitation is measured at the Boston Water Works. ‡ Received too late to be considered in departures, etc.

Form Map C—1901.

Chart I. Tracks of Area

Chart I. Tracks of Areas of Low Pressure. January, 1891.





NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations.

The dotted shading ( ) indicates fog belts.

The ruled shading ( ) indicates the position in which field-ice or icebergs were observed.

Chart II. Isobars, Isotherms, and Winds, January, 1891.

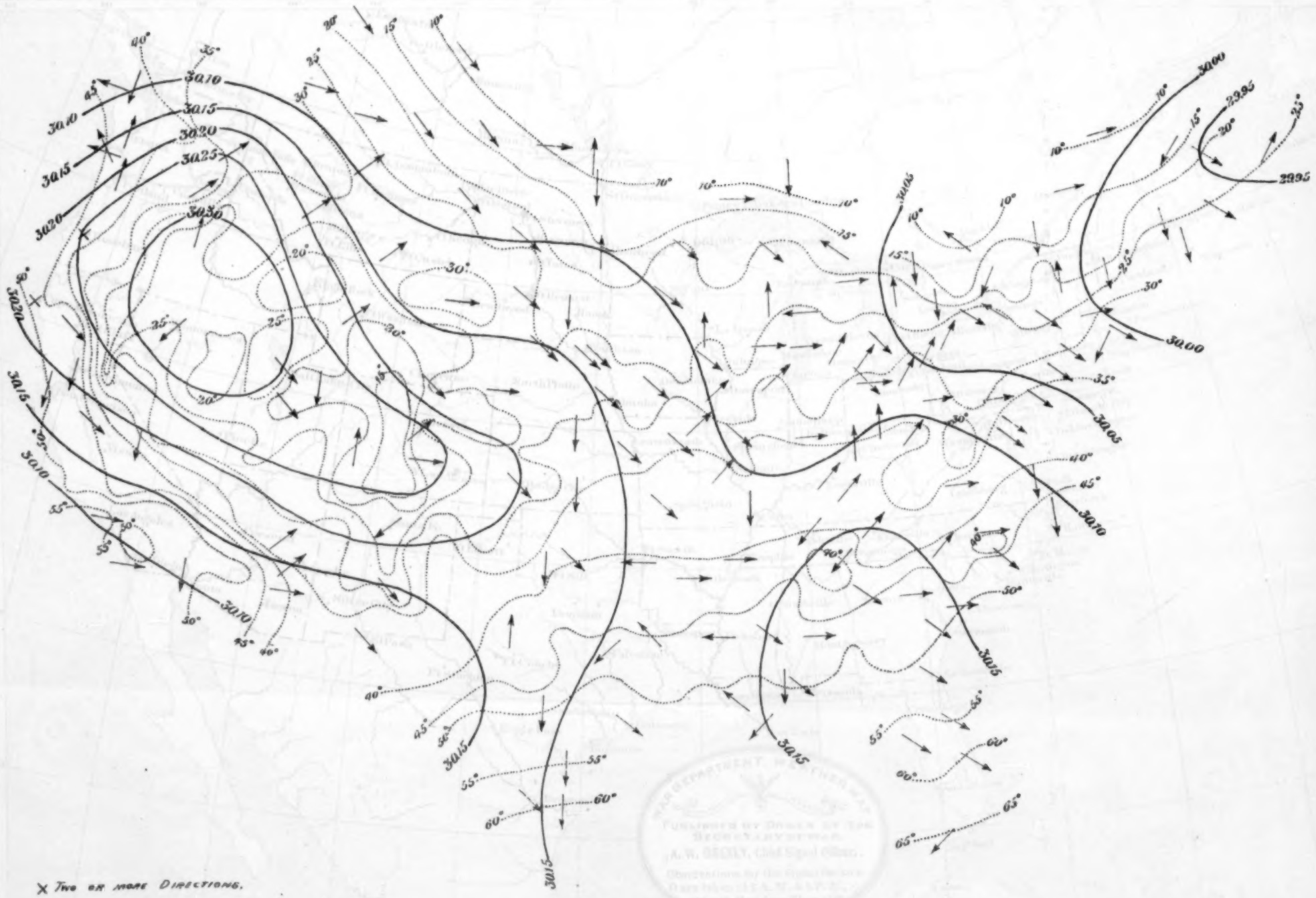


Chart III. Precipitation, January, 1891.

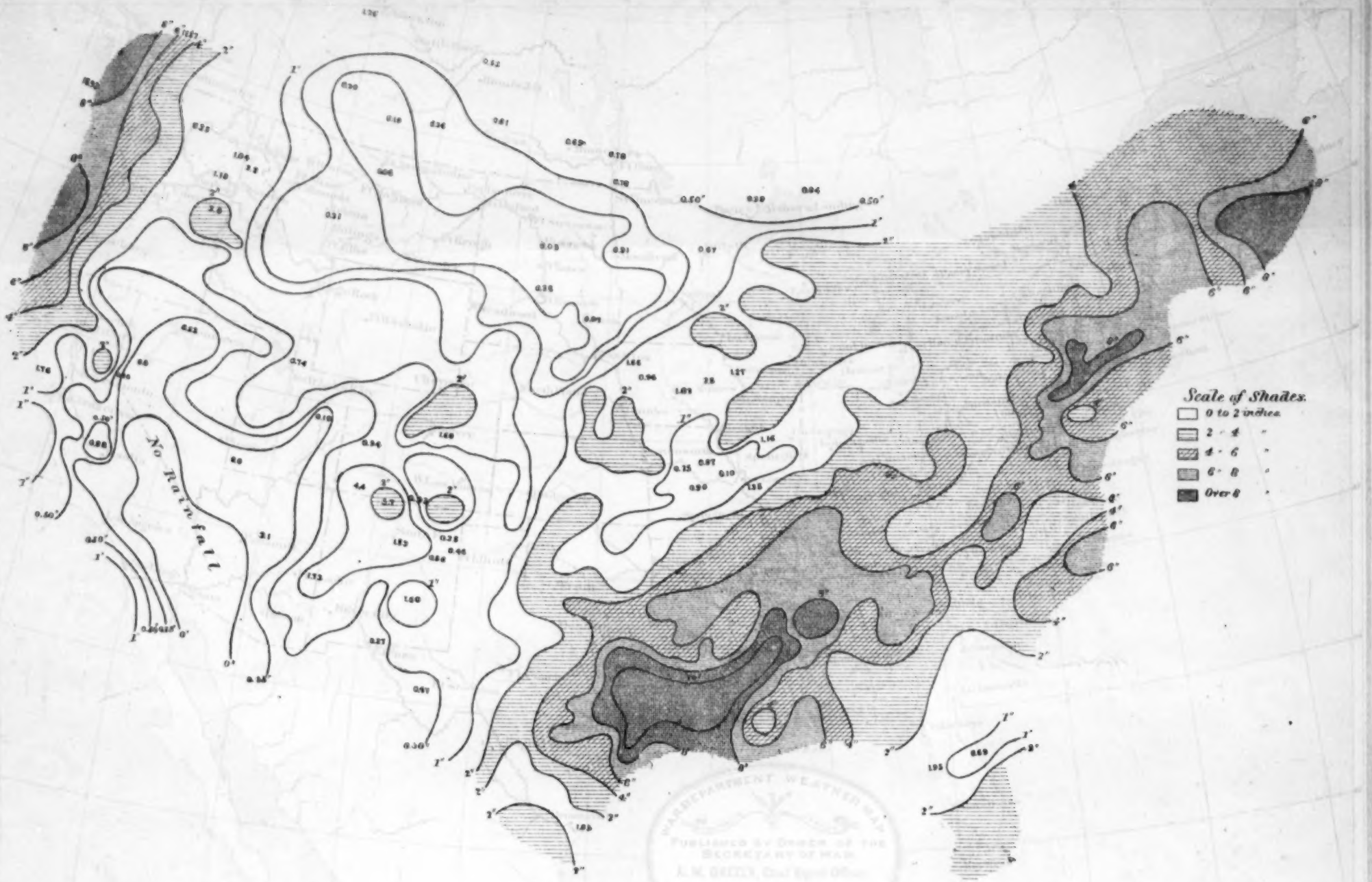


Chart IV. Depth of Snow (inches) reported on ground January 31, 1891, and Limits of Freezing Weather

Chart IV. Depth of Snow (inches) reported on ground January 31, 1891, and Limits of Freezing Weather.

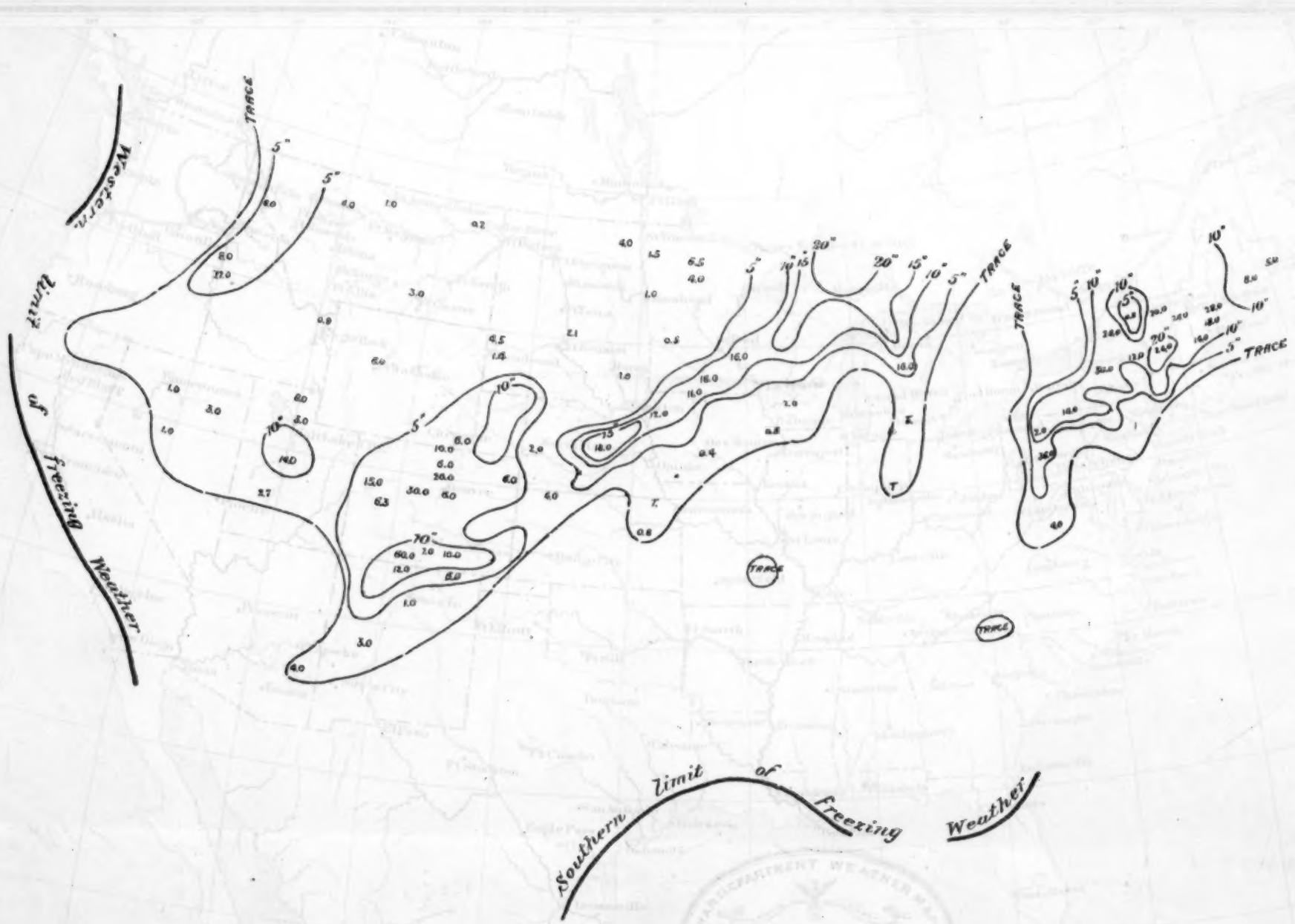
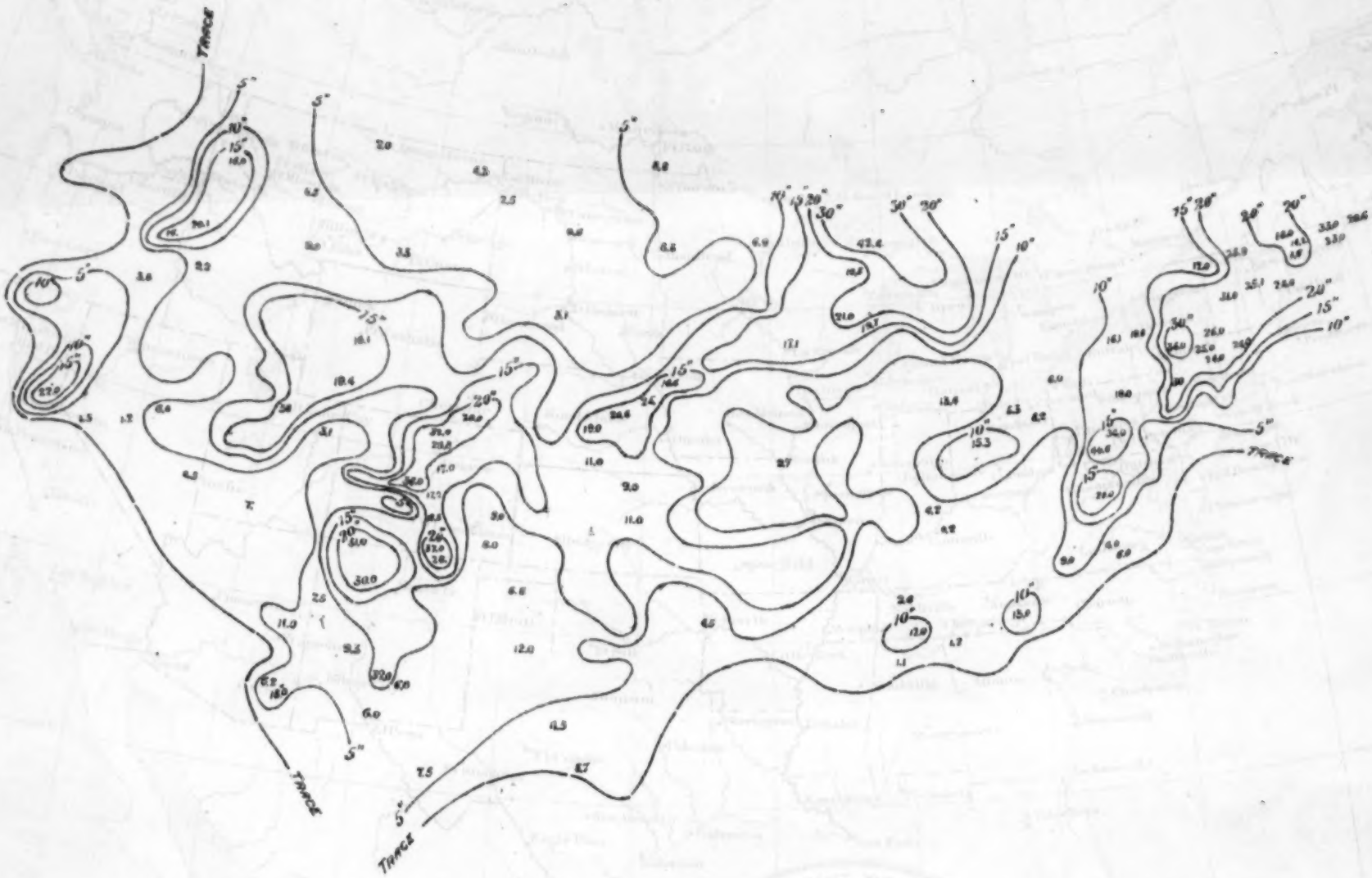



Chart V. Depth of Snowfall (inches). January, 1891.